COSMETICS SOAPS FLAVORS

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Editorial Comment

The Demonstrator Case Mess

The whole merchandising structure involving the use of demonstrators was blown wide open when the Federal Trade Commission brought action against Elizabeth Arden in the now celebrated Gus Blass case wherein Elizabeth Arden was fined triple damages for, as it was stated, violating the Robinson-Patman act.

The use of demonstrators has been long looked at by manufacturers as a means whereby a newcomer in the field of cosmetics could build up a following without resorting to expensive mass advertising. This has been considered to be an advantage for the small manufacturer over the large.

The other side of the picture is seen by the Federal Trade Commission. It holds that the corner druggist who has one bottle of perfume on the counter and another on the shelf is entitled to the same treatment and consideration as the most advantageously located department store.

Granted that the choice of the Arden case to be used as one establishing precedent was a poor one, the fact remains that the matter would have to be decided sooner or later.

So far no one has come forward with a completely satisfactory answer to the problem.

If the demonstrator method of selling is not to be scrapped altogether, there must be some common meeting ground established between Government and the industry, taking into consideration such points as store location, prestige, traffic, length of contract, repeat or new business, duplicate coverage, etc.

If no equitable method of using demonstrators can be worked out, another method will have to be found. Whatever the ultimate answer, there is one point that must not be overlooked-the consumer. It would be comparatively simple to pull out of low volume stores. Certain manufacturers who maintain elaborate costs sheets can tell to the fraction of a cent how much they lose through such sales. The reason they continue to accept such losses as a gesture of courtesy to the ultimate consumer. NEUTRAGLAS









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Besiderata by MAISON G. DENAVARRE

ABSORPTION BASE

Swelling the parade of less expensive absorption bases is a new product just being offered. It has all the properties of the usual absorption base including a fairly high cholesterol content. It may be used in creams, lipsticks, make-up, emulsions and most any type of cosmetic where emollient or emulsifying properties are desired. And the price is a lot lower than you are accustomed to paying.

MILKIFIERS

A series of so-called milkifiers for use in shampoos and waving solutions are available. Thus if 10 parts of milkifier and 60 parts of a 20 per cent soap solution are mixed and warmed to 70 deg. C and 30 parts of water are heated to 60 deg. C and added to the milkifier-soap-solution mixture under rapid agitation, the resulting emulsified liquid shampoo is quite a stable product. However, some of the sudsing qualities of the original soap solution will have been lost, a characteristic of all soap solutions that are variously touched up with fats or surface active agents.

NEW WETTING AGENTS

Four new and different wetting agents have recently been made available for cosmetic usage. Two are liquids, one a vaseline-like paste and the last, a dry powder. Indications for use are the usual such as shampoo, cleansers, emulsifiers, bubble bath products, etc.

JASMIN-LIKE CHEMICAL

Fully realizing that a perfume chemical as sold is not always a straight chemical, it is interesting to

smell a sample of octyl crotonyl acetate. It has a most interesting jasminlike odor, almost reminiscent of jasmone. That it should go well with benzyl acetate or propionate is obvious. But additional, it has a nuance worth experimenting with, regardless of the fact that benzyl acetate is a well known standby.

REGRETS

It was with regret that many people read a letter over the signature of Harold Hutchins as publisher, that his paper, Cosmetic & Drug Preview, had ceased publication due to unsettled conditions in the trade journal field. (Boy, how well we know it!) It was a good newspaper with plenty of stuff on the ball, not to overlook the feature column over the publisher's name. Good luck to you, Harold Hutchins, whatever your next move may be.

CATIONIC COMPOUND

Still another cationic surface active agent hits the market, claimed to be 200 times more effective than phenol. It is a white fluffy powder, readily soluble in water. It is stable, non-toxic and non-inflammable. Outside of shampoo, shaving lotion and a couple of other cosmetics, it might be worth trying out as a preservative.

PERFUME TROUBLES

Recently, this laboratory had occasion to check the solubility of 24 different perfume compounds, all submitted for use in shaving lotion. It is a fairly well established fact that the average alcoholic strength of shaving lotions is about 50 per cent alcohol. It is also well known



M. G. DeNavarre at work in his laboratory

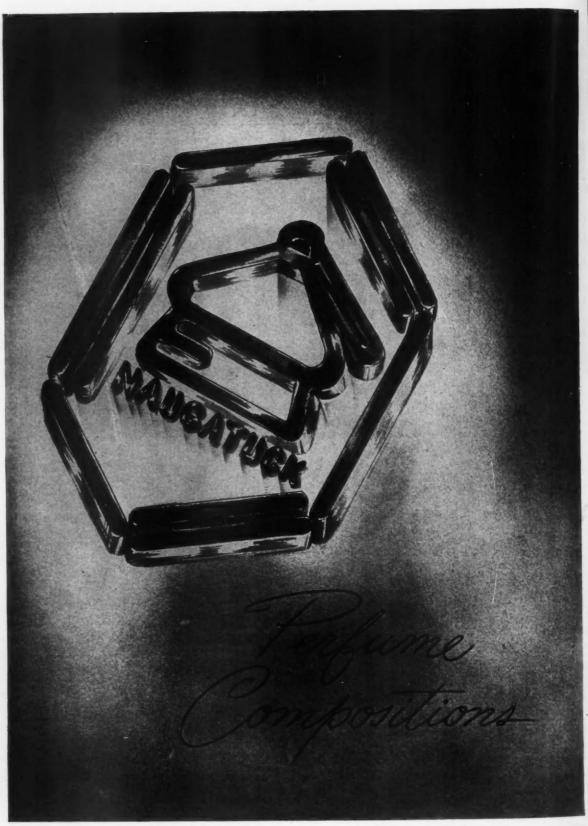
that the Treasury Department requires at least 1/2 ounce perfume oil per gallon at this alcoholic strength. To make a long story short, only one compound was soluble in this ratio. When the alcoholic strength was increased to 60 per cent, 5 were soluble. On the addition of 5 per cent propylene glycol, no change took place. Yet all perfume compounds were sold as after-shave lotion compounds. Did the perfumer use his noodle when he worked on these? More than one perfumer was involved for the compounds represented samples from nine different houses. Gentlemen, there is food for thought here. You may be pouring a lot of valuable and costly perfume · down the sewer if you don't carefully check its solubility in alcohol of the strength you are using.

COLD WAVE OPACIFIER

A concentrated emulsion of plastic material can be diluted for use as a milkifier or opacifier for cold wave solutions. It gives a water soluble film on drying. There are a lot of advantages thought to be gained from using this type of product, but to be sure, try it yourself. It is being quite widely used by cold wave solution makers.

GERMAN COSMETICS

It will be interesting to see what Dr. Karas brings back from Germany in the line of new or better things developed during the war years. Since fats of all descriptions were scarce, cosmetic materials will



NAUGATUCK

NEW YORK

undoubtedly take the shape of cellulose derivatives, wetting agents and emulsifiers. There may have been some new things on perfumery. If the records are still available, other valuable data might be found, as in syntheses, hair waving and cosmetic processing machinery.

COLD WAVE INDICTMENT

The nearly simultaneous appearance of an editorial in Good House-keeping Magazine and in the Journal of the American Medical Association both roundly condemning cold waving solutions containing thioglycollates as dangerous, is finally bringing forth some of the data cold wave manufacturers have claimed to have right along, while others are getting busy

to find out just how safe their product really is—outside of the fact that several million waves have probably been given in recent years.

Had the cold wave solution manufacturers found out how safe their product was-then published their findings, they would have established the factor of safety, if such it was. Instead, rightly or not, the indictment against cold waves has been read by many. The rebuttal will be read by few. The timing is bad indeed, but maybe a lesson can be gained from it. The moral is, if you are sure you are safe, say so in print before the other man can get at you, for you will be the one to be remembered and not the other fellow. Hormone cream manufacturers note! specialties such as dish-washing compounds, wall cleaners, window sprays and various other detergent compounds. Can you advise what type of chemical specialties have been in great demand? Have you any references or surveys dealing with consumers' preferences which you would be able to send to me.

C. S.—KENTUCKY

A: We have no surveys showing relative preferences of one type of cleaning specialty over another, but suggest you contact the U. S. Department of Commerce who undoubtedly have some of this data already tabulated. Some of the magazines that conduct such surveys are American Home Magazine, 444 Madison Avenue, New York 22, N. Y.; Milwaukee Journal, Milwaukee, Wisconsin; New York Times, New York, N. Y.

605. CREAM SHAMPOO FORMULA

Q: What is the latest information on formulating a cream shampoo. I have been trying to put one together using a concentrated solution of a synthetic detergent with various thickeners but have had no luck so far. Could you make any suggestions? I understand there is a good base on the market. Do you know of it? I would be thankful for any help you could give me.

J. F. B.—PENNSYLVANIA

A: Cream shampoo is nothing more than a paste made from either soap or wetting agent. Essentially, a good shaving cream formula will make a satisfactory cream shampoo and we suggest that you try some of the formulas on pages 429 and 430 of deNavarre's Chemistry and Manufacture of Cosmetics as a type that are known to work satisfactorily. You may also wish to experiment with a wetting agent by adding a dry wetting agent to the colloidal gel of magnesium and aluminum silicate, sold under a trade name, the supplier of which is given to you under separate cover. Ordinarily, at least 20 per cent of wetting agent is required in such a paste for satisfactory performance. Your product will need from 10 to 15 per cent of glycerine or propylene glycol to keep it from drying out. Keep the liquid additions at the lowest point to retain consistency. Some wetting agents are sold as pastes and have been simply perfumed and tinted and repackaged.

QUESTIONS AND ANSWERS

602. ARTIFICIAL VINEGARS

Q: Will you inform us if there is such a thing as a concentrate from which we could make vinegar by adding water? We have been buying vinegar from the U. S. A. and bottling it, and we would like to reduce the freight. Could we manufacture vinegar using glacial acetic acid as a base?

C. A.—HONDURAS

A: As far as we know, vinegar contains approximately 4 to 5 per cent of acetic acid. If the vinegar is made from apple cider, it usually contains around 2 per cent of additional cider vinegar solids. An imitation vinegar may be made from glacial acetic acid touched up with about 2 ounces of acetic ether, 4 ounces of syrup and 4 ounces of caramel in a 25 gallon batch. An imitation cider vinegar may be made from mixing about 5 per cent of good sweet cider and enough acetic acid and water to give the proper strength. The mixture is allowed to stand in an oak barrel for about two weeks. Check the acidity and adjust with additional water and allow it to age another two weeks or so, making the final adjustment to the proper strength. All such vinegars are artificial vinegars and must be so labeled insofar as U. S. regulations are concerned. There are some companies in the United States that sell vinegar in concentrated form so that it may be diluted with several times its own weight of water. The name of these goes to you under separate cover.

603. ANALYSIS OF CORN OIL

Q: Will you outline all the details of corn oil and an analysis of it—just why it is so good a binding agent in core making—if there are any books available as to its use in the foundry and its substitutes, etc.

E. R.—INDIANA

A: While we would like to help you, we do not know a thing about corn binders and are sorry to be unable to give you anything worthwhile. If you are interested in an analysis of corn oil, we suggest you see the book "VEGETABLE FATS AND OILS" by Jamieson, available from The American Perfumer.

604. DETERGENT COMPOUNDS

Q: I have been recently discharged from the Army of the United States. As a chemist by profession, I am planning on opening a chemical laboratory to formulate chemical

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LO WAVE SOLUTIONS besed on



Ammonium Thioglycollate by SUMMIT

yield a lighter and a more lasting our

This and result reflects the unsurposed quality of Ammorium Thioglycultate by Summit —its complete freedom from this diglycollic acid (thin other) and from—its extremely law content of such buffering materials as dithio diglycollic acid, glycollic acid, and allowed and the original absence of beauty metals.

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X-Ray Spectroscopy in Cosmetics

X-ray diffraction is employed for the study of the crystal structure of materials . . . The method of use and its applications are presented in this article

by NICHOLAS T. FARINACCI, Ph.D.*, and F. GEORGE FIRTH, M.S.†

PROGRESS in manufacturing through the ages has advanced only as fast as basic knowledge regarding the materials employed has been accumulated. Any manufacturing operation however simple, is liable at times to suddenly develop idiosyncrasies that can be quite baffling.

ANALYTICAL METHODS

In order to understand the materials of manufacture and to standardize them, various analytical methods have been devised. The familiar wet way chemical method is useful for determining the elementary chemical constituents of a substance. Spectrographic, spot test and polarographic techniques can be employed to determine the presence of small amounts of elements present in a sample as impurities, or as beneficial addition materials. Micro analytical techniques have also been evolved suitable for analyzing small quantities of materials. All of these methods, however, are somewhat inadequate in presenting a true story of the nature of materials.

The chemical techniques will indicate what gross elements are present and in what amounts. Spectrographic and the other aforementioned techniques will only give analyses of elemental constituents alone and tell nothing about how the elements are combined in a sample substance.

It must be obvious that any analytical technique that will give information about the actual combination of elements will be of value. The petrographic microscope can be useful to a limited extent in this regard with relatively simple crystalline materials, but falls down badly with unknown or imperfectly crystalline substances.

Since the bulk of materials in nature are crystalline aggregates it follows that a study of the crystal structure will divulge a great deal of information. X-ray diffraction is employed for such studies; and can give answers that are unequivocal.

BASIS OF METHOD

So called soft x-rays which are presently employed in x-ray diffraction techniques are very high frequency electromagnetic waves of essentially monochromatic frequency.

The radiation is emitted from a metal target surface when high velocity electrons strike it. These are produced from a hot filament source and accelerated to the target by a high potential.

The frequency of the x-radiation produced is dependent on the nature of the target material and a certain

minimum excitation voltage for ac-

For instance a copper target tube under suitable conditions will give monochromatic radiation at 1.539A deg. An iron target will produce characteristic radiation at 1.932A deg. 1A 10-8 cm.

Thus these wave lengths are of the same order of magnitude as are found in fundamental atomic or molecular structures, and the dimensions of such structures can be conveniently expressed in angstroms.

A crystal can be regarded as a three dimensional structure with a certain grouping of atoms or molecules repeated at regular intervals. Such a grouping is called a unit cell.

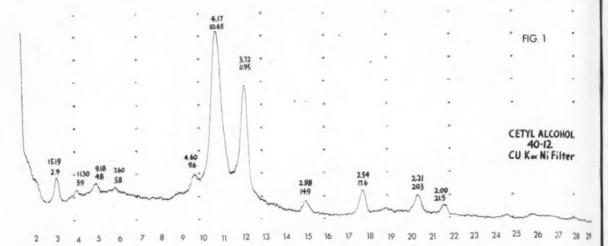
It must be obvious that this unit will vary considerably in shape and dimension with different elemental or molecular constituents, and that such a cell could be uniquely described by a set of dimensions of its parameters.

Because of the regularity of structure in a crystal it can be regarded as being a three dimensional diffraction grating that will diffract x-rays much the same as light is diffracted by an optical grating.

This, of course, will enable the dimensions between parallel planes of atoms to be determined by studying the relationship between wavelength and diffraction angle.

Such a relationship is actually very

* Consultant of Scien-Tech.
† Research Engineer, North American Philip This article was presented at a meeting of the Scientific Section of the Toilet Goods Associa-tion May 17, 1946.



simple and is expressed by the Bragg formula:

 $nl = 2d \sin T$

where l = the wave length (in Angstroms)

n = the order of reflection (an integer)

d = the distance between the particular set of planes (dimension)

T = the Bragg angle or angle of reflection

Thus all that is required to determine d is to know the l employed which is a constant for any target material, and the angle of reflection from the crystal.

If the crystal is rotated it follows that all planes will be irradiated and reflections given off by all such planes.

These reflections are known as intensity maxima, and if a piece of sensitized photographic film is situated radially about the crystal, they will blacken the film at the angle of reflection. From this can be dedetermined the angle of reflection from every plane in the crystal and consequently the "d" value.

In nature, however, crystals occur as agglomerates, but this does not make any difference to the method.

Each individual substance present in a mixture will give off reflections upon being irradiated as though it alone were present. This fact makes possible the qualitative and quantitative analysis of complex materials in a simple fashion because the information obtained is a series of "d" values with different intensities. This measured data is listed, and by comparison with a series of published tables, the composition of the unknown materials can be determined.

The relative intensities of the maxima from each material determines the amount of each present. This method of identification is known as the powder method of identification.

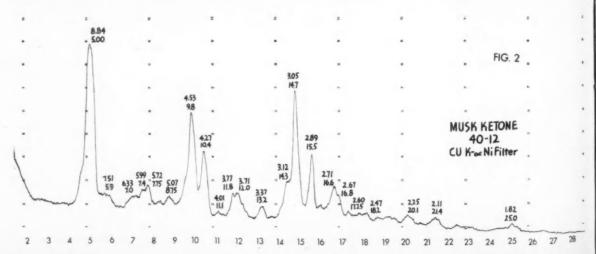
INSTRUMENTATION

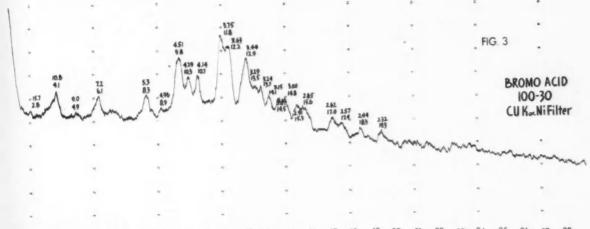
In the past x-ray diffraction studies have been made by methods closely resembling those previously described. The sample is in the form of a powder coated on a fine fibre about 0.5 mm. in diameter. This sample is situated centrally inside a short closed cylinder and a fine pencil of monochromatic radiation bathes the fibre. Situated radially around the sample is a photographic film. Diffraction cones of radiation are given off by the sample and cut the film in arcs. These arcs appear on the developed film and are measured and computed in terms of relative intensity and equivalent "d" values.

This procedure, however, is subject in practice to several errors that can be partially compensated for.

Some of these errors are due to:

- 1. Particle size of sample
- 2. X-ray absorption of specimen
- 3. Lack of concentricity in sam-





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4. Film shrinkage

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- 5. Film sensitivity variation
- 6. Errors in measurement

Very recently however a new type of instrument has become commercially available that makes use of a Geiger-Muller counter instead of film. This instrument is known as a Geiger-Counter X-ray Spectrometer and makes use of principles that largely eliminate the errors that occur in the employment of the film technique.

Instead of the customary Debye-Scherrer camera geometry, a focussing condition is employed, where a flat powder layer is irradiated by a divergent beam instead of a fine pen-

The diffracted beam converges from the specimen at the Bragg angle to an acceptance slit at the mouth of a Geiger tube, situated on an analyzer arm that moves radially around the specimen.

The arm is driven by a motor and is electrically connected to the chart drive system of a fast strip chart recorder so that the angular displace-

ment of the arm is laid out along the chart length.

The radiation received by the Geiger tube is electrically modified so that the pen displacement of the recorder is proportional to the radiation intensity received. Thus the finished chart will represent an automatic record of intensity distribution versus angle, which of course can be converted to "d".

Thus the diffracted maxima from the sample appears on the chart as a series of peaks of different heights and is expressed in "d" values. The half width value of the maxima can also be employed to determine particle size within certain limits, such studies being useful in studies of absorption and covering power.

Mixed crystals or solid solutions are easily recognized by the fact that such a condition changes the "d" values of the patterns of the combined component ingredient; while in a simple mixture no such change takes place.

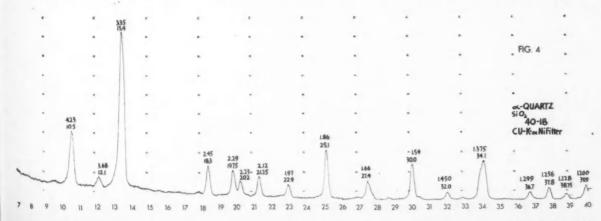
Using the Geiger-Counter Spec-

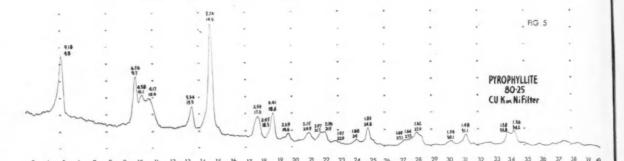
trometer it is often possible to determine as little as 1 per cent of a substance in a sample and the quantitative accuracy can also be 1 per cent or better. This, of course, is better than most wet way or other analytical methods and makes it a very useful tool for plant control or research.

APPLICATIONS

Our objective is to indicate the general utility of the x-ray diffraction method to the cosmetic industry and to industries which supply it with raw materials. This might be approached in many ways, although examples of applications to typical materials are direct and easy to understand. The chosen examples are synthetic musk ketone, cetyl alcohol, bromo acid, quartz, pyrophyllite, a ready to use face powder and a mixture of face powder with pyrophyllite.

The most difficult part in the presentation of this paper was to select typical cosmetic materials. The basis for selection rested on the desire that





the group selected should show the broad scope of applicability of the diffraction method to inorganic and organic compounds. The examples should suggest applications to minerals, dyes, essential oils, synthetic aromatics, and to finished products which contain them. Seven x-ray patterns hardly could be expected to stimulate the imagination adequately but the alternative would be to convert the printed copy of the Scientific Section proceedings to a monograph on the subject. Compromise was made with the assurance that selection of the examples would have meaning to cosmeticians who are interested in covering or removing human odor and others who replace pallid or indifferent skin colors with brilliant colored dyes to improve generally the appearance of the texture of the skin. Traditionally the selected materials have been of considerable interest as may be noted in T.G.A. Proceedings of the past few

Although only seven examples are shown a few other typical applications in the field of cosmetics which are in our files are the sterols (absorption bases) bentonite (lotions) phosphates (soaps and shampoos) bonated resins (hair preparations) aragonite and calcite in calcium carbonates (dentrifices) cinnamyl compounds (oil of cassia) thioglycolates (permanent waves) sodium dioctyl sulfosuccinate (detergents), rouges (manicure preparations) and anthranilates (sun tan materials). These few are indicative of a potential wide applicability of x-ray diffraction to cosmetic materials. They may also suggest a fruitful approach with this method to a variety of problems that plague the cosmetic manufacturer.

A question that might be appropriate at this point is:

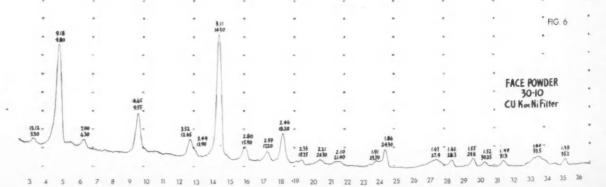
What can x-ray diffraction do for me?

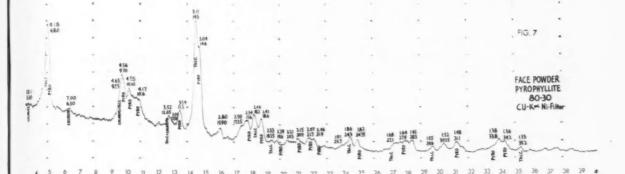
One answer is that it will:

- Identify the chemical compound,
- 2. Determine the amount present.
- Estimate crystallite and particle sizes below 0.1 micron.
- Quantitatively determine the degree of solid solution.
- 5. Determine molecular weight.
- Determine the structure of the molecules in the crystals.
- Establish size of unit cell, type of lattice and space group.

Cosmetic material can be studied most conveniently to provide the data in the first four items above. This is fortunate because the data in items 5, 6 and 7 are still obtainable only by tedious theoretical studies. On the other hand, as noted in the description of the apparatus and method the measurements necessary for 1, 2, 3 and 4 may require only a few minutes. In this short time a permanent record of the measurement is made automatically.

Fig. 1 will illustrate the x-ray diffraction intensity pattern for a complex organic compound cetyl alcohol. In each set of two numbers at the top of the intensity peak the lower indicates the angle at which the intensity peak occurs while the upper is the distance between the crystals planes from which the x-ray beam supposedly is reflected. (There would be little advantage for a description of the utility of the method should the detailed phenomena of diffraction be discussed in this paper.) The set of "d's" (interplanar spacings) and the relative intensities (heights of the intensity peaks relative to the most intense line 4.17 in this sample) identify the compound. Thus the data for cetyl alcohol will be as in Table 1.





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1/1a Relative intensity
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The same applies to the figures for musk ketone, bromo acid quartz and pyrophyllite as they are patterns of the material alone without added materials.

Fig. 6 illustrates, however, the pattern of a ready to use face powder. Three constituents are readily identified, talc chlorite and zinc oxide. Needless to say, it is an excellent face powder.

Fig. 7 illustrates the pattern of the same face powder and pyrophyllite which were mixed in roughly equal proportions. The contribution of each of the constitutents readily may be seen. These are labelled with the exception of zinc oxide. The superposition of Fig.'s 5 and 6 would give the same result when due allowance was made for changes in intensities because the components dilute each other.

We discussed above the significance of the charts which represent typical measurements of the x-ray diffraction method. Each measurement requires interpretation which may be done by comparison of the measurement with those in a cardindex or with standards such as those of Figures 1-5.

UTILIZATION

The next question would be: Where can this method be of use to me? This may be answered broadly, that you have here a means for the determination of most of the "mysterious somethings" which underlie the desirable or undesirable properties of your products. Partial itemization may be as follows:

a. Aging processes that change the taste of essential oils in dentrifices from bitter to sweet or vice versa.

b. Similar changes that transform soft calcium carbonate to the harder form. Or is it the raw material which you used.

c. Evaporations and oxidations that change a depilatory to an ineffective smelly fluid.

d. Changes that lead to variations in acidity (pH), as in deodorants and depilatories.

e. Fine variations in color shades due to different proportions of pigments or dyes.

f. The composition changes in face powder which change adhesion covering power, slip, color, bulking,

In conclusion, it may be said that to utilize you must first be able to gauge the utility. The above brief presentation of x-ray diffraction may help the Cosmetic Industry to gauge its utility.

French Jasmin

In 1945 the French crop of jasmin flowers totaled 550 metric tons valued at 60,000,000 francs, compared with 427 tons in 1944. The output of essence in 1944 amounted to 1,300 kilograms, worth 90,000,000 francs. Prices of jasmin concrete remained fairly stable during 1945 at 100,000 francs per kilogram.

Consumption of jasmin in France amounts to 25 per cent of total production. Before the war, the chief foreign markets by countries and percentages were: The United States, 30; Argentine, 28; Germany, 12; Great Britain, 12; and Brazil, 5. Throughout the war, exports to the United States and Great Britain were cut off

The essential-oils industry is currently of tremendous importance to France, inasmuch as its products are among the rare export items of the world. Plans of the perfumery industry include further experimentation both on the part of the Syndicate of Perfume Manufacturers of Grasse, and individual plants.

Cultivation of jasmin (Jasminum grandiflorum) in France occurs chiefly in the district of Grasse, on an estimated area of 2,000 hectares (4,940 acres). The estimated average yield per hectare is 3,000 kilograms (2,677 pounds per acre). Wild species, found in the Maritime Alps, are used to a limited extent for grafting

At present an increase in output of the cultivated variety of jasmin is hindered by the lack of jasmin slips. Numerous plantations, abandoned during the war, must now be rehabilitated. Extensive collection of jasmin flowers has also been prevented by the lack of labor. Much work of harvesting was done in prewar days by migratory seasonal workers, mostly women from Italy. Since they are now forbidden to enter France, the labor supply is insufficient.

Extraction of the floral oil was formerly obtained through enfleurage, employing purified fats. This process was abandoned during the war in favor of the volatile solvent process which produces the concrete form. The latter, when treated mechanically, with alcohol, results in jasmin absolute.—Foreign Commerce.

A Synthesis of Benzyl Benzoate

An unusual synthesis of benzyl benzoate from benzyl chloride and dry sodium benzoate catalyzed by a small quantity of a tertiary alkyl amine is described*

by WALTER H. C. RUEGGEBERG

T is a well-known fact that benzyl benzoate can be produced by refluxing aqueous sodium benzoate with benzyl chloride.2, 3 The yields, as shown in Table 1, in this aqueous process, mainly depend upon the reaction time and the mole ratio of sodium benzoate to benzyl chloride.

Thus, for example, operating at a mole ratio of sodium benzoate (as a 42 per cent aqueous solution, by weight) to benzyl chloride of 4 to 1, one obtains benzyl benzoate in yields of about 76 per cent after a reflux period of about 4 to 6 hours. Simultaneously, considerable hydrolysis of benzyl chloride to benzyl alcohol is encountered, thus causing the loss of some of the chloride to an undesirable and unavoidable side reaction. Also, since high yields of the ester require a large excess of sodium benzoate, it becomes necessary, for the sake of economy, to recover the unused sodium benzoate from the aqueous layer of the reaction product.

These adverse properties of the aqueous esterification procedure between benzyl chloride and sodium benzoate can be averted through the use of a tertiary amine acting as a catalyst on a mixture of benzyl chloride and dry powdered sodium benzoate. The use of tertiary amines as catalysts in the production of benzyl benzoate dates back to 1912,1 but it has not been referred to again in the chemical literature until recently.3

BENZYL BENZOATE YIELD INCREASE

In order to effect the desired synthesis, it is only necessary to heat the reaction mixture, consisting of equimolar quantities of benzyl chloride and sodium benzoate, with a

the sodium benzoate. It is then a simple matter to remove the small excess of benzyl chloride by means

Table 1 Formation of Benzyl Benzoate from Benzyl Chloride and Aqueous Sodium Benzoate

Run no.	Benzyl chloride, moles	Sodium Benzoate, moles*	Reflux period at 100-110 deg. C hours	Yield of crude benzyl benzoate. per cent?	m.p. of crude benzyl benzoate deg. C.
1	1.5	1.0	8	52.8	16.5
2	1.5	1.0	6	55.5	17.9
3	1.5	0.1	4	53.4	15.5
4	1.5	1.0	2	47.1	15.9
5	1.0	1.5	8	70.4	15.3
6	1.0	1.5	6	71.7	17.0
7	1.0	1.5	4	69.4	18.2
8	1.0	1.5	3.25	71.3	15.4
9	1.0	1.5	2	67.0	16.8
10	0.5	1.0	8.	74.4	17.2
11	0.5	1.0	4	72.2	17.4
12	0.5	1.0	2	70.0	17.2
13	0.25	0.1	4	76.4	16.5
14	0.25	1.0	2	75.0	16.9

*Employed as a 42 per cent aqueous solution, by weight. †Based on benzyl chloride.

small amount (about 0.5 per cent based on the total charge) of an unsubstituted trialkylamine at 100 to 140 deg. C. for 0.5 to 1.0 hour. As shown in Table 2, the yields of benzyl benzoate in this type of double decomposition are well over 90 per cent.

of distillation, together with a small amount of benzyl alcohol produced in the water washing step of the crude reaction product.

Schematically, the catalytic action of the tertiary amine may be represented in the following way:

$$\begin{array}{c} CH_2Cl + NR_4 & \longrightarrow & CH_2NR_4^+Cl^- \\ & & & & \\$$

Ordinarily, it is more desirable to employ a slight excess of benzyl chloride in order to consume all of

Tertiary amines such as triethylamine, N-methyl morpholine, hexamethylenetetramine and pyridine are

^a Abstracted from an article by Rueggeberg. Ginsburg and Frantz which appeared in Ind. Eng. Chem. 38, 297 (1946), and reproduced here with the permission of Ind. Eng. Chem.

Table 2
Reaction Data on the Amine-Catalyzed Formation of Benzyl Benzoate

Run no.	Benzyl chloride, moles	Sodium benzoate, moles	Amine added*	Average reaction temperature, deg. C.	Reaction period, hours		benzyl	eld of benzoate, cent	m.p. of benzyl benzoate, deg. C.
1	0.7	0.5	I ml. triethylamine	110-115	1	91.2	distilled	product	18.6
2	0.7	0.5	I ml. triethylamine	110-115	1	98.2	stripped	product	18.3
2	0.7	0.5	1 ml. triethylamine	130-140	0.5	97.3	stripped	product	18.1
A	0.7	0.5	gr. hexamethylene						
4			tetramine	100-130	1	87.0	stripped	product	16.4
5	0.54	0.39	0.77 gr. hexamethylene						
*			tetramine	130-140	1	94.1	stripped	product	13.6
6	0.7	0.5	0.5 gr. hexamethylene						
			tetramine	120-130	2	91.9	stripped	product	16.5
7	0.7	0.5	1 ml. N-methyl-morpholine	120-130	1		stripped		18.6
8	0.7	0.5	1 ml. pyridine	120-130	1	87.3	distilled	product	18.5
9	0.7	0.5	1 ml. pyridine	130-140	1		distilled		18.4
10 & 11	0.7	0.5	I ml. triethanolamine	130-140	1	no c	ppreciab	le visible reaction	
12	0.7	0.5	I ml. diethylamine	135-145	1	69.3	stripped	product	18.0
13	0.7	0.5	I ml. morpholine	125-135	1	22.3	stripped	product	

*All amines were anhydrous.

all effective catalysts. On the other hand, triethanolamine and secondary amines such as morpholine are virtually inert, whereas diethylamine exhibits only moderate activity. While most of the tertiary amines produce good results, hexamethylenetetramine and pyridine are less desirable than triethylamine or N-methyl morpholine. Pyridine consistently produces blackish, dirty materials which require distillation for isolation of a clean product. While hexamethylenetetramine produces almost waterwhite benzyl benzoate which requires only vacuum stripping, use of this catalyst results in a product whose melting point is decidedly lower than that produced by the other tertiary amines. This lowering of the melting point is undoubtedly due to the amine, or some degradation product thereof, included in the product probably as a quarternary ammonium salt.

CRUDE REACTION PRODUCTS

With the exception of a few of the ester products listed in Table 2, the data in both tables refer to the crude reaction products. In order to show more effectively how the crude products may be improved by a simple vacuum distillation, the analyses of two samples obtained from the aqueous esterification process are given in Table 3. Column 1 of Table 3 refers to a sample which was distilled from the crude reaction product after a water wash only, while the data in column 2 describe the distillate from a crude product, which was washed twice with an equal volume of 5 per cent sodium hydroxide solution fol-

Table 3

Analyses of Vacuum Distilled Benzyl Benzoate*

	Without caustic wash	Atter caustic wash
Melting point, deg. C Boiling range, deg. C at about 2.5 mm. of Hg	18.5	18.7 132
Refractive index, n. D	1,5687	1.5687
Specific gravity, sp. gr. 25/4 Ester content, per cent Chlorine content, per cent Free benzoic acid, per cent	1,113 99.0 0.28 less than 0.01	1.114 99.7 0.00 less than 0.01
Odor	none	none

*Crude products were obtained from the aqueous esterification procedure.

lowed by two water washes of equal volume prior to vacuum distillation. The data indicates that it is entirely feasible to produce a virtual chlorine-free grade of benzyl benzoate from benzyl chloride and sodium benzoate.

EXPERIMENTAL

Procedure for aqueous double decomposition between benzyl chloride and sodium benzoate: One mole of sodium hydroxide in the form of a 16.7 per cent aqueous solution by weight (40 grams of NaOH pellets in 200 ml. of water) and one mole of benzoic acid are placed in a 1 liter, 3-neck, round bottom flask equipped with a mercury-seal stirrer, a thermometer, and a water-cooled reflux condenser. The reaction flask, immersed in an oil bath, is brought to reflux temperature (100-110 deg. C.) and the desired amount of benzyl chloride (ranging from 0.25 mole to 1.5 mole of benzyl chloride per mole of sodium benzoate) is added through the condenser. The reaction mixture is stirred vigorously at reflux temperature for 2 to 8 hours.

At the end of the reaction period,

the product is transferred to a separatory funnel and the lower aqueous layer removed. The upper layer, containing the ester, is washed successively with several 200 ml. portions of 5 per cent aqueous sodium hydroxide; two or three such washes usually suffice to extract all of the unreacted benzoic acid, and are followed by two water washes of about 200 ml. each. The combined aqueous layers are extracted with 50 ml. of carbon tetrachloride or benzene and this organic layer is added to the total organic product layer.

The combined organic product layers are then stripped of all volatile materials down to 5mm. Hg pressure and the still residue, consisting almost entirely of the desired benzyl benzoate, is analyzed for ester content (by saponification), chlorine content, and amount of residual free benzoic acid. Its refractive index, $n_{\rm p}^{20}$, and its melting point are also determined.

The combined aqueous extracts are acidified by the addition of concentrated hydrochloric acid, whereupon unreacted benzoic acid is precipitated. It is filtered off with suc-

tion, dried in air, and weighed.

The reaction data so obtained, together with any deviations from the general procedure given above, are given in Table 1, in a condensed form.

Procedure for amine-catalyzed nonaqueous double decomposition between benzyl chloride and sodium benzoate: One half mole of dry sodium benzoate powder and seventenths mole of benzyl chloride are placed in a 500 ml., 3-neck, round bottom flask, equipped with a thermometer, a mercury-seal stirrer and a reflux condenser terminating in a calcium chloride trap. The mixture is stirred for a few minutes to a homogeneous slurry and about 1 ml. or 1 g. of an amine is added. With constant and rapid stirring, this

viscous mixture is brought to 90-130 deg. C. (depending upon the catalytic activity of the amine used) in about 10 minutes by means of a "Glas-Col" electric jacket. Sufficient heat is generated, after the reaction begins, to raise the temperature of the reaction mixture to 140-155 deg. C. This temperature rise continues for about 5 minutes. External heat is applied to the reaction flask so that the temperature is maintained somewhere between 100 and 140 deg. C. The overall reaction periods vary from 0.5 to 2.0 hours.

When the reaction is complete, the product is poured into 0.5-1.0 liter of water and is thoroughly shaken. The lower organic layer, after separation, is washed with two 250 ml. portions of water.

The combined aqueous washings are extracted with two 50 ml. portions of carbon tetrachloride and the extract is added to the organic product laver. Without further treatment this product is stripped in vacuo. (In some runs the stripped benzyl benzoate residue was distilled for purification, using an all-glass still with a 6-in. unpacked column of 1 in. diameter.

The results of these investigations are given in Table 2.

For further details regarding these syntheses and analytical data, the reader is referred to the original arti-

Survey of Recent Cosmetic Patents

by I. J. FELLNER, Ph.D.

Treatment of fatty alycerides. Colgate-Palmolive-Peet Co., Jersey City, N. J. U. S. 2,383,614, August 28, 1945. Fatty glycerides are reacted with a monohydric alcohol having 1 to 6 carbon atoms per molecule to produce a liquid mixture of esters, glycerine and partially unreacted glycerides. The esters and the glycerine are removed and the partially reacted glycerides are reworked.

Detergent. American Cyanamid Co., New York, N. Y. Canadian 430,-757, Oct. 23, 1945. A detergent composition in solid cake form comprising 5 to 15 per cent by weight of a water soluble salt of di(-normal octyl) sulphosuccinate, boric acid in amounts of at least equal to the amount of said succinate and a sulphosuccinate of the formula:

H Me.O3.S.C-COOMe

H₂ C-COOCH₂(H₂CO)_nY in which n is an integer not greater than 2. Me is a salt forming radical such as ammonium or alkali metal and monovalent organic salt-forming radicals, and Y is an alkyl or aliphatic monovalent acyl radical containing 8 to 18 carbon atoms in amounts effective as emollient.

Processing spice. California Flaxseed Products Co., Los Angeles, Calif. U. S. 2, 384,532, Sept. 11, 1945. The spice is coarsely crushed, a major portion of the flavoring oil is removed, the low oil containing solid material is finely ground, and the flavoring oil is then restored to the finely ground solid material.

Red lipstick. Ladislaus Scuecs. Zurich, Switzerland. Swiss 227,034. August 2, 1943. The lipstick contains resins, e.g., shellac, a solvent therefore, lipoids, vitamin F, a fat soluble and water-insoluble red dve. and essential oils.

Chewing gum base. Monsanto Chemical Co., St. Louis, Mo. U. S. 2,383,145, August 21, 1945. The base comprises a terphenyl, a vinyl resin such as polyvinyl acetate or polystyrene, and a wax.

Soap products. National By-Products, Des Moines, Iowa. U. S. 2,382,-063, August 14, 1945. A granulated soap product is prepared by subjecting a soap in paste form to the action of mulling rotors in a vessel at room temperature until the mass is broken down into granules. The mulling rotors are carried on a revolving cross head and are so supported as to run slightly above the bottom of the vessel.

Granular soap product. Procter & Gamble Co., Cincinnati, Ohio. U. S. 2.388.632, Nov. 6, 1945. A granular soap product comprising a uniform mechanical mixture of a granular soap which balls when added to warm water and a granular non-balling soap product whose formula contains coconut oil in substantial proportions, the balling tendency of the mechanical mixture under comparable conditions being less than that of a granular soap product containing the same proportion of coconut oil soap and otherwise comparable, but prepared from a mixture of fats containing the coconut oil.

German Patent, D.R.P. 268,621 (1912).
 Gomberg and Buchler, J. Am. Chem. Sec.
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 Rueggeberg, Ginsburg and Frantz. Ind. Eng.
 Chem. JS, 207 (1946).

Short Adages

by R. O'MATTICK

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THERE we were, Dr. Rowmateral and I, sipping warm milk and rum. It was entirely too cool, three thousand feet above sea-level, for his favorite drink of iced scotch and soda with a drop of Oil of Peppermint. The stars in the black space looked much larger than they do at the Planetarium in New York. Around us were the tall mountains of New Hampshire—from Dr. Rowmateral's Summer retreat both of us could see the lights at Franconia Notch.

"This is really the place to smell perfume oils and know what you are smelling," said my friend. "The air is clear, free from dust, carbon-monoxide gas from cars and sulfur odors from factory smokestacks. So that when the odor has an off-note you know that it really has an off-note!"

Although this was Doctor's vacation, the talk could not long continue without reverting to shop. He had been reading the Proceedings of the Scientific Section of TGA the day before. "What did you think of the talks at the Convention in May?" I asked. "They were for the most part good, but too long. I believe they should be like a girl's skirt—long enough to cover the subject but short enough to be interesting," was the good Doctor's opinion.

It couldn't be helped. From then on we talked about cosmetics and perfumes late into the night. There is both science and art in perfumes and in cosmetics, according to the Doctor, but more science in cosmetics and more art in perfumes. Most people in our industry, he went on, think that if you put enough fine ingredients together and leave out all the cheap ones, you will end up with a beautiful odor. But that is not the case.

I once put all the fine floral absolutes, musk ambrette, isolates and animal fixatives together without

rhyme or reason and got just what I expected—a strong dull heavy mixture!

I have been tempted to write to every Essential Oil House for three of their finest creations—then pour all the fifty times three samples together just to see what the result would be. Judging by the number of samples every E.O.H. sends out many others must have thought of the same thing and actually put their idea into action.

Our literary friends who know that we collect everything from the World's Literature that pertains to perfumes still send in quotations. We wish to thank one of them for sending this from Shakespeare's King John, Act IV, Scene 2:

"To gild refined gold, to paint the lilv.

To throw a perfume on the violet."

Rhymed couplets have always been popular forms of advertising with We know it's very hard to get But try us now for Musk Ambrette.

We shall wait to see how the market situation develops before releasing any more of these gems from the pen of Mr. Sand L. Wood.

We get a great deal of innocent amusement from the boys who tell you that they can't give you any dimethyl diethyl dieverything but they wish they could and they appreciate your thinking of them and the shortages won't last forever and some day they will be around begging you for business and they hope you will give it to them. But as they say all this and more too, you can almost see the tongues in their cheeks and you feel they hope the day will never come when anything will ever be too plentiful again.

Yes sir, said Mr. A. Goodbuy—it's all a matter of *supply* and *demand* as the economists and financial writers like to put it. But I can't de-

. . .



"Here's a cleansing cream, night cream, day cream and vitamin B complex, all in one!"

some consumers of perfume oils—like the folks that make shaving-creams, shampoos and whatnot. Sand L. Wood thought that verse might be just the thing for suppliers of same and contributes these suggestions:

We can supply you with Patchouli—

Hope to hear from you-

Yours truly.

Phone or send your orders in For a drum of vanillin.

mand what the suppliers say they can't supply. All I do is ask and get a very polite and firm no for an answer.

Otto Stock sprained his back the other day. We wondered whether it was because he carried too large a pile of back orders back to the office. Fortunately the mishap took place on the golf-course while he was trying out a new kind of drive and so we are spared the sad task of recording what would have been a rather backward pun.

Cosmetic Trends in the Middle West

Promotion on the sale of deodorants has a good future . . . A demand for larger holiday packages will up the prices . . . Department store sales training needs reconversion to compete with drug-store selling

by JEAN MOWAT

BUYING organizations, manufacturers and chief executives who usually rely on national survey reports to indicate a trend for the coming months may find themselves on a limb and even sawing it off, unconsciously. Any survey made during the past three months can be tossed out the window, due to the various strikes that have delayed reconversion, eaten deeply into savings and taken that extra which is usually for some pet project.

While cosmetic and perfume sales in the Middle West held their own last month, many buyers are wondering if the pace set for the past six months can be maintained. Many of the major buying groups with stores widely scattered report the outlook good; equally as important, organizations are holding off on the placement of holiday goods hoping to find a buying-vane which will swing to the future direction. Department stores are about through gambling on the higher priced brackets for some of the first French perfumes offered at the higher prices are remaining on the shelves. The added cost of \$10 to these has changed the selling, although three months ago probably no buyer would have considered that important. Quality merchandise, at good prices, is in demand.

The picture is far from even being a light-gray in tone. It is still in high key selling in comparison with pre-war sales. Some indication of the future may be witnessed in the new laboratories which are being erected and which will not be ready until about the first of the year. These are not being pushed to completion for there is still a dearth of the es-

sential oils and perfumes that these particular firms want to use for the super-duper lines they have researched on during the war-period.

"You can say for us," said a major executive of a new laboratory, "that we are only interested in finer cosmetics and will offer them to the trade in good time." The good time was indicated as when all restrictions are off, new bottles can be made, new jars used and the so-called standard equipment junked to make way for the streamlined and smartly labeled packages to come.

DEODORANTS HAVE A FUTURE

When the Middle West baked in temperatures from 110 in the shade in Minnesota and Nebraska to a low of 92 in Illinois, there was a consensus of opinion that what was needed was a really strong, impressive promotion on-deodorants. Just at that time there was a new liquid type released to many stores and they used quarter and half pages for presentation. Sales are said to be fair. As the initial deodorants were liquids, then creams, sticks and again liquids, the public ought to soon make up its mind what it will back. Regardless of the type, anyone in the cosmetic end, especially the girls behind the counters during those hot days want a strong sales' campaign to stress deodorant importance.

SUN TAN TESTINGS

There are several new types of suntan protectives being offered which are post-war products. The early movement has been fair, but the next six weeks will tell the repeat business story which is all that interests a

buyer. The bronze tones are especially favored but where a skin does not do more than burn there is a reportedly good demand for something that will enable one to play in the sun without coming in as one huge blister.

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In this same general category of sun tanning needs are the growing shades in leg-make-up. These are as varied as the tones of nail polish and each has its own particular following. Most stores visited throughout the Middle West are confining their presentations to nine brands, four of which sell out as fast as the merchandise comes in. The others are ones which are good, have proved satisfactory but have not had the national advertising given the four leaders.

LARGER HOLIDAY PACKAGES

Whether or not ceilings will be lifted to give a higher mark-up is a question many buyers would like to have answered. They all report that there is a demand for larger holiday packages. This automatically ups the price. Many buyers and salespeople do not think this can be done with great selling success unless there are new molds for jars and bottles and new designs in packages. And the paper situation remains tight. As glass bottles for foods will not show improvement before 1947 there is little hope that a luxury industry can expect much change before the holiday buying for 1948 begins, a year from now. Jars are in the same time classification.

The June sales on manicure kits, both with and without the polishes, etc., and the combination kits of perfume, powder and rouge were leaders in many cities with Detroit being a leader. Chicago followed closely, and hand-care kits (cream, polish, nail conditioner and a few manicure tools) opened a new avenue of a combined unit sale. These items were featured "June gifts" and one store suggested "Keep in touch with glamour" and used a full page to stress it.

While discussing packages, one store made the smart combination of featuring white shoes with eight different well known brands of leg-makeup and combined it with a depilatory. With so much talk being released upon the importance of deodorants, another topic which can well be combined with it in some type of kit. definitely for glamour, is a depilatory ... not only for underarm and toparm grooming but most essential for the women who will wear nylons (and demand the sheerest there is) but never remove the mass of hairs from their legs which are more than a manly chest can boast. While women buyers comment on this from Omaha to Detroit, from Kansas City and St. Louis to the Twin Northwest Cities, the comments of the men ought to be enough to singe the hair.

SELLING NEEDS RECONVERSION

Department stores throughout the Middle West are pretty well cared for in the amount of merchandise they have in stock. But if they lose sales it can only be blamed on the superior and constant training being given drug-stores sales personnel. Too many department stores, even those using company representatives to sell this particular merchandise, are slipshod in selling and all too often quite ignorant of how to make more than one sale.

Ten leading cities in the Middle West have direct full-page competition in advertising with drug stores. Often there is never any mention of drugs, and in addition many of these drug stores feature windows which are stunning and are drawing trade into the store. On the other hand leading style stores have to use their expensive displays for apparel which has no ceiling and vet a smart buver manages to keep his products in those same windows. During June two stores broke away from the long established custom of an apparel window or a cosmetic display and in Chicago, Marshall Field & Co., featured a great corner window with a smart country-club powder room in which women were seated or standing about. and were well turned out for an informal evening at the club. The other store, Carson Pirie Scott & Co., managed to have some stunning kits of perfume-cologne-powder combinations, or nail kits with all the colors for one's various costumes, as a foil against which the apparel was shown. Both reported unusual interest in this program, and substantial sales. But this was only a drop in the bucket for drug-store cosmetic-perfume windows continued to draw huge busi-

WHEN DO CEILINGS COME OFF?

Buyers throughout this area are eager to know about the future of prices. Will these be held to the present level and perfumes and colognes advanced or will all creams move forward? At the present time a study of sales in the perfume end is being made by each store to determine the public reaction. The immediate result was a slowing of sales, or the purchase of a smaller bottle.

How radio commentators as a whole missed the upping of sweet scents is a mystery—the trade had its new price tags ready and while not much went up before Father's Day the sales on these special items were heavy. It had to be, dozens of full pages were used and it was nothing for leading stores to use one or two each to present the needs for father's own shelf.

The young men graduates—especially high school—also came in for special attention, probably because they are fast moving toward that time when they will become fathers and so were presented with gifts from this department for their good work in school. In Father's day selling there was rarely just one item featured but at least two and usually three making it really worth while, from point of sale and presentation.

ABOUT THE MIDDLE WEST

Water softeners, especially in gay colors and fresh fragrances, are selling well where water is hard.

"We find that fancy soaps are among our best sellers," was a comment made in a Des Moines store.

Solid colognes are again being featured by a number of leading stores and Chicago counters show a good deal of this type. It is reported a slow mover but then under the new promotion of suggesting it be used for one's travel case, locker, etc., it may come into a new selling role.

Duluth especially favors a tone that carries out the red of the sun in its formal polish presentations.

Cream shampoos are still far in advance of the liquid types and Hudson's of Detroit is giving them a special plug. This store and city, like others situated along the waterways of the Middle West, is sponsoring a sea-toned polish for Summer wear that glitters.

St. Louis and Kansas City are both sponsoring loose powder for smartness in Summer. While cake makeup is used to some extent the stress being given to powder, both in display and advertising may indicate a Fall trend that will make it important. Powder tones are made to sound like poems of color.

Minneapolis, St. Paul and Kansas City are strong contenders for perfume position in finer selling. They are also endorsing cosmetics to retain the look and skin of youth.

NOW ABOUT A GLAMOUR BOX

Buyers are all looking for something new in the way of kits. Young-Quinlan, Minneapolis, has been featuring a "chuck box," an idea developed from the food boxes that were carried to cattle-men at roundup time in Texas. The firm has filled it with sauces, seasonings, etc., and suggested it as a barbeque gift idea. It is wooden, and has a handle. Some one could easily use this idea to make a travel kit that would actually hang up while in use, or be left that way. It would save wear and tear on both plane and train and it could be packed for one week-ending and each item replaced in the container after use. Thinking of the pick-up saving this would be, both to the hostess and the guest, it sounds as if some such simple item might be made into something worth while. It might be a glamour box-powder, cleansing cream, tissue cream, nail remover, polish, hand lotion, lip-stick, rouge with plenty of tissues, perfume, cologne and tale, deodorant and shampoo cream, maybe water-softener and leg-lotion. As a car-compartment idea it has definite possibilities for that cross-country trip, or the one to Alaska or Mexico.

Dackaging

DERMETICS: Dermetics Sachet, a powdered perfume, is packaged in a handsome glass jar. Its flesh-pink tone is matched by the glass stopper and is accented by burgundy lettering on the jar. The carton is striped in gold, burgundy and white.

D'ORSAY: D'Orsay's new scent, Belle de Jour, is bottled in the classic D'Orsay eau de toilette bottle and packaged in a sleek shining black box.

MIAHATI: Blue Fox cologne has been introduced by Miahati, Inc. The tall cylindrical bottle is surmounted with a massive but translucent cap. Each bottle is packed in cartons colorfully decorated with little foxes.





DERMETICS

D'ORSAY



The American Perfumer

52 July, 1946



POND'S





CHEN YU



& Essential Oil Review



HELENA RUBINSTEIN

HELENA RUBINSTEIN: The "Finishing Touch" kit has been created by Helena Rubinstein for its compact completeness. The special sizes of hand lotion, cleansing pads, foundation, powder, cologne compact, nail polish, lipstick and mascara are blue to match the felt kit.

POND'S: Dreamflower talc and dusting powder have been added to Pond's preparations. The matching packages are patterned in a pastel-flowered background, banded in pale blue-green and lettered in gold. The talc, in both small and large sizes, features a metal base and top with a swivel plastic sifter in blue-green.

DUCHESS D'ANDRE: Duchess D'Andre debuts Eventide dusting powder, a new peach tinted bath powder. It comes in a 7-ounce handmade box in twilight blue and coral. The design depicts the Eventide dusk fantasy. A banded puff for a quick all-over dusting is included.

CHEN YU: In a handsome bit of packaging, Chen Yu presents Sea Shell and Flowering Plum nail polish and matching lipstick. Sea Shell, a rosy-pink color, is presented with a large pink sea shell sketched against sea green. Flowering Plum, Chen Yu's blue-red, comes in a lavender and pink package, with plum blossoms traced on the sides and top.

SOAPS

Analysis of Glycerine and Glycol Fatty Esters

A new method of the estimation of monoglyceride, diglyceride and triglyceride in a mixture containing all three is presented in this article

by A. TROY and A. C. BELL†

THE fatty esters of polyhydroxy compounds are widely used in cosmetics and toilet articles as emulsifying agents and the estimation of their ingredients is becoming increasingly important. For example, the mixture sold as "Glycerine Monostearate" usually consists of all three glycerine stearates, together with smaller amounts of free glycerine, free fatty acid and traces of water. From the point of view of the chemist, this is gross contamination, and for formulation work it would be very desirable to have at least some idea of the percentage of each contaminant. It seems generally agreed that monoglyceride itself, because of its free hydroxy groups, is the most active emulsifier, diglyceride next, with triglyceride not at all active. It is important, then, to know the proportions of these materials.

Recently an oxidation method of estimating monoglyceride has been published by Pohle, Mehlenbacher and Cook.¹ This is based on a procedure of Malaprade's^{2 3 4} who em-

ployed periodic acid as an oxidizing agent. This interesting reagent quantitatively oxidizes molecules having hydroxyl groups on adjacent carbon atoms. By applying an excess to the ester mixture, and then measuring the unused portion by means of iodimetry, a quantitative estimation of the 1, 2-dihydroxy compound may be obtained.

THE PROBLEM

The estimation of mono-, di- and triglycerides in a mixture containing all three is complicated by the fact that three unknowns are present. Any of the analyses ordinarily ememployed by the fat chemist thus give an infinite number of answers. For example, a saponification equivalent which indicates (say) pure dilaurin is also the saponification equivalent of a mixture of equimolecular parts of monolaurin and trilaurin. It is also the value obtained for an infinite number of mixtures between these two limits. This is brought out in Figure I, in which all the compositions represented by the straight line have the same saponification value.

It doesn't make any difference which analysis is applied. The same result is obtained with, for example, acetyl value, combined glycerine, combined fatty acid, apparent molecular weight, etc. This is because all of these analyses are essentially determinations of the equivalent weight.

To solve the problem then, it is necessary to apply another analysis which determines only one of the ingredients. This is what Mehlenbacher's determination has provided. In effect, it draws another straight line across the triangular diagram, intersecting the one obtained from an equivalent weight estimation. The composition expressed by the point of intersection is the composition of the mixture. This is shown in Figure II.

There remains now the selection of the best method of determining the equivalent weight, and it is with this that the present paper is chiefly concerned.

Saponification value suggests itself at once because of its high precision and simplicity, but it was found that it was accompanied by certain disadvantages. These are arithmetical in nature and are best explained by illustration. The saponification values of the three esters are as follows:

 $[\]dagger$ Research and Development Department, Colgate-Palmolive-Peet Co.

This article was presented at a meeting of the Scientific Section of the Toilet Goods Association May 17, 1946.

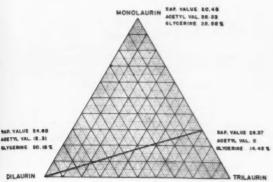


Figure 1

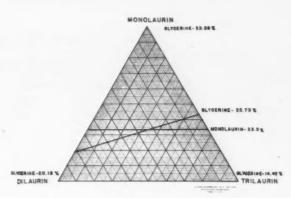


Figure II

Monolaurin 20.48 per cent KOH Dilaurin 24.60 per cent KOH Trilaurin 26.37 per cent KOH

It will be noticed that the difference between dilaurin and trilaurin is only 1.77 per cent KOH, and this means that as we dilute pure dilaurin with pure trilaurin, we can expect for each per cent increase of the latter an increase of only 0.018 per cent in the saponification value. Or putting it in reverse order, an error in saponification value of about one in a thousand gives us an error of over one unit per cent in our estimation of the mixture. Since errors in saponification value of five times this are not unreasonable, the analysis cannot be trusted to within five unit

Acetyl values have a similar uncertainty, and for the same reasons. Although this analysis exhibits greater differences among the three glycerine esters, the advantage is neutralized by the fact that it is also susceptible to greater error. For instance, the presence of free fatty acid is likely to throw it off.⁵ Further, it is a tedious analysis when the acetylation is done with acetic anhydride and requires a rather large sample.

What is required here is adequate differences combined with accuracy of analysis. The determination of combined glycerine by means of periodate oxidation fulfills these conditions and has the additional advantage of being rapid and easy.

It is only necessary to split out the combined glycerine by saponification and then apply the periodate method to the freed glycerine.

The differences of combined glycerine content of the three glycerine laurates are as follows:

Monolaurin 33.58 per cent
Dilaurin 20.18 per cent
Trilaurin 14.42 per cent

The spread between di- and trilaurin is 5.76 per cent glycerine, and we have found that the periodic acid method is good to about three parts in a thousand. Thus in calculating per cent dilaurin the error to be expected is about 1.2 per cent.

The method is applicable to glycol esters as well as those of glycerine, provided the combined glycol has adjacent hydroxy groups in its molecule. Here again the glycol is freed by saponification and then oxidized similarly. A number of analyses of the laurates of ethylene glycol have been made to illustrate this. (Table 2.)

EXPERIMENTAL

Since the method involves an oxidizing agent, it is of course necessary to free the sample of reducing substances before applying it. In the case of glycol and glycerine esters, the usual impurity is free glycol or glycerine. This is removed quantitatively by washing an ethyl acetate solution of the unknown with water.

The method consists of splitting the ester by saponification, oxidizing the freed glycerine or glycol with periodic acid in suitable excess, and titrating that excess iodimetrically. Corrections are then applied to compensate for the per cent of free fatty acid, unsaponifiable and water present, since the calculation deals only with the esters. The accuracy of the calculation naturally depends on the precision with which the molecular weight is known, and it is therefore necessary to determine the molecular weight of the fatty acid.

The completeness of saponification of coconut oil, tallow, cottonseed oil and other fats has been exhaustively studied by Mathews and coworkers⁶ ⁷ and their results indicate that in alcoholic potassium hydroxide medium these fats completely saponify upon being boiled for one hour.

REAGENTS

0.1N sodium thiosulphate, standardized against potassium diochromate.

0.2N sodium thiosulphate, standardized against potassium diochromate.

TABLE I

* Per cent Monoglyceride determined by the Pohle, Mehlenbacher, Cook Method.

			ANALY	SIS OF PUI	RE AND	MIXED	GLYCERYL LAU	RATES			
Sar	nole of E	ster	Per Cent Com-		Per Cent			Per Ce	ent Ester (1	Found)	
er Cent Mono	Per Cent Di	Per Cent Tri	bined Glycerol (Calculated)	Combined	Glycero 2	(Found) Average	Glyceryl error in parts/1000	Per Cent Mono	Per Cent Di	Per Cent Tri	Unit Error in Ester Value
100	_	-	33.50	33.45	33.38	32.42	-2.4	99.7	_	_	-0.3
-	100	_	20.19	20.23	20.24	20.24	+2.5	_	100.3	-	+0.3
-	-	100	14.27	14.25	14.38	14.32	+4.9	_	_	100.4	+0.4
34.1	32.5	33.3	22.61	22.40	22.90	22.65	+1.5	34.2*	32.9	32.9	±0.4
50.7	32.5	16.8	25.83	25.74	25.81	25.78	-1.9	50.5*	31.5	18.0	±1.1
1.4	48.8	49.8	17.24	17.30	17.31	17.31	+4.0 Av. ±2.9	1.5*	50.0	48.5	±1.3 Av. ±0.63

TABLE 2
ANALYSIS OF PURE AND MIXED GLYCOL LAURATES

Sample	of Ester	Per Cent					Per Cent Es	ter (Found)	
Per Cent Mono	Per Cent Di	Combined Glycol (Calculated)	Per Cent C	ombined Gly	col (Found)	Glycol error in	Per Cent Mono	Per Cent Di	Unit Error in Ester Value
Mono	DI	(Calculated)		2	Average	parts/ 1000	Mono	DI	In Ester value
100	_	25.40	25.48	25.68	25.58	+ 7.0	100.7	-	+0.7
	100	14.55	14.62	14.82	14.72	-11.5	_	101.0	+1.0
50	50	19.98	19.90	20.11	20.01	+ 1.5	50.3	49.7	±0.3
25	75	17.26	17.10	17.38	17.24	- 1.2	24.8	75.2	±0.2
75	25	22.69	22.44	23.01	22.73	+ 1.3	75.4	24.6	±0.4
						Av. ± 4.5			Av. ±0.52

0.5N alcoholic potassium hydroxide solution.

25 per cent potassium iodide solu-

Absolute ethyl acetate C. P.

OXIDANTS

(a) Dissolve 5 gm. periodic acid in 200 ml. of water and then add 800 ml. of glacial acetic acid.

(b) Dissolve 11 gm. periodic acid in 800 ml. of water, add 70 ml. of 1:1 sulphuric acid, stir and make up to 1 liter with water. Store oxidants (a) and (b) in a glass-stoppered amber bottle.

APPARATUS

Burette (Chamber), 100 ml. total, 50 mls. graduated in tenths of a ml. Burette, 50 ml. accurately calibrated in tenths of a ml.

Pipette, 50 ml.

Pipette, 25 ml.

Erlenmeyer Iodine flask, 250 ml. Erlenmeyer Iodine flask, 500 ml.

Separatory funnel, 500 ml.

PROCEDURE

I. Preparation of glycerine and glycol-free esters (per cent waterinsoluble matter).

Weight 20 ± 3 grams of the melted fat into a 500 ml. separatory funnel, (Sample weighed from a beaker by difference on a torsion balance. Weight reported to the nearest centigram), containing 200 ml. of ethyl

*Samples contained added emulsifying agent.

acetate solvent.*

Shake the sample in the separatory funnel until thoroughly dissolved. If necessary, warm carefully.

Some commercial samples might contain added surface-active agents. Such samples must be dealt with appropriately, depending on whether or not the foreign material interferes with the analysis.

Wash the solution four times with 100 ml. portions of distilled water. Carefully draw off and discard aqueous layer each time. Transfer the washed solution quantitatively into a dry, tared, wide-mouth 250 ml. Erlenmever flask.

Evaporate off the ethyl acetate under a stream of dust-free air by setting the flask into the steam portion of a steam-bath. After 1.5 hours, no perceptible odor of ethyl acetate will be observed. The flask is then placed in a 60 deg.-70 deg. oven for 15 minutes and re-weighed. The percentage of Water Insoluble is calculated using equation (1) under "Calculations."

II. The following analyses to be run on separate portions of the water insoluble.

Should the fat be suspected of containing large amounts of protein matter, melt and filter it before proceeding.

MONOGLYCERIDE CONTENT**

Use the method outlined by W. D.

Pohle, V. C. Mehlenbacher and J. H. Cook, *Oil and Soap*, Vol. XXII, p. 115 (1945).

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> or sta fla tit

> > th

GLYCERINE OR GLYCOL CONTENT

The appropriate sample (see Table 4) is weighed into a dry 500 ml. Erlenmeyer Iodine flask. If the sample is solid, weigh on a watch glass; if liquid, weigh in a capsule.

TABLE 4

Approximate Size of Sample Used for Analysis

Ester	Sample in Grams
Glyceryl Stearate	0.30-0.35
Glyceryl Cocate	
Ethylene Glycol Stearate	
Ethylene Glycol Laurate .	0.45-0.50
Propylene Glycol Stearate	0.60-0.65
Propylene Glycol Laurate	0.45-0.50

Add 20 ml. of 0.5N alcoholic KOH, measured with a burette or a pipette, to the sample in the flask, and boil contents for 1 hour using an efficient ground glass-jointed reflux condenser. At the end of the refluxing period, the flask is placed on an asbestos board for a few seconds, and then the condenser is washed down with 25 ml. of distilled water.

Pipette 50 ml. of oxidant (b) into the flask, stopper and shake well and allow to stand for 15-17 minutes at room temperature. After the reaction

* Ethyl acetate used as solvent to minimize

emulsification with a simple constraint of the semiben established in these laboratories that there is virtually no beta-monoglyceride present in mixtures prepared by ordinary methods.

TABLE 3

ANALYSIS OF SOME COMMERCIAL SURFACE-ACTIVE "MONOESTERS"

	B	Percent	0	Per cent Free	Per cent Free Fatty	Per cent Water	Per cent Other
Ester Type	Per cent Monoester	Triester	Per cent Diester	Glycarine or Glycol	Acid as Stearic, etc.		Water Soluble
A—Glyceryl Stearate	51.8	22.9	11.6	9.07	3.03	2.09	-
B—Glyceryl Stearate		32.6	7.8	7.23	7.93	0.67	9.7*
C—Glyceryl Stearate	44.9	37.8	11.6	2.25	2.06	0.44	-
D—Glyceryl Stearate	44.8	36.3	10.8	5.55	0.16	1.90	_
A-Coconut Monoglyceride	. 42.6	42.7	4.0	9.86	0.18	0.13	
B—Coconut Monoglyceride	. 50.1	16.5	10.4	20.15	2.51	0.36	
C-Coconut Monoglyceride		15.4	nil	26.10	1.60	2.80	
A-Propylene Glycol Stearate	55.0	22.8	_	0.13	12.87	0.13	9.1*
B-Propylene Glycol Stearate		13.8	-	1.12	0.40	0.16	-
A-Ethylene Glycol Stearate	. 81.0	17.2	_	0.30	0.20	0.63	-

period is complete, add 20 ml. of 25 per cent KI solution and wash the neck of the flask with a little water.

Titrate the liberated iodine with 0.2N sodium thiosulphate using the 100 ml. Chamber burette, permitting a maximum flow rate until a light orange color is approached. Add the starch solution, wash the neck of the flask again with a little water and titrate slowly to the disappearance of the blue iodostarch color. Record this reading.

Treat a blank similarly. Blanks should agree within 0.10 ml. The correct excess of periodic acid is gotten from equation (2).

Duplicate samples for combined glycerine or glycol should be run for greater accuracy.

The per cent combined glycerine or glycol is calculated using equations (3) and (4).

The per cent mono-, di- and triglyceryl esters in the water-insoluble fraction is calculated using equation (5) under "Calculations."

The per cent mono- and diglycol esters is calculated from equation (6).

In either case, equation (7) is used

(1) wt. of ethyl acetate extract

to convert the percentages found on a "water-insoluble" basis to an "as is" basis.

A graphical method of solution of the per cent glyceryl esters is shown in Figure II for glyceryl laurate. The per cent combined glycerine used in the graph should also be corrected using equation (4), the point of intersection of the monoglyceride and glycerine lines being the composition of the mixture.

Similarly, using only two coordinates a graphical solution for glycol esters can be obtained.

FREE FATTY ACID

Weigh 2-3 grams of the water insoluble and proceed as outlined in Official and Tentative Methods of the American Oil Chemists' Society p. 30 b, (revised 1940). Calculate the per cent free fatty acid as lauric, stearic, etc.

DETERMINATION OF WATER

Usually the water content of the water insoluble is in the neighborhood of 0.2 per cent and this value may be assumed in the calculations. In cases of doubt, a Karl Fischer

moisture determination should be run on a 3-4 gram sample. K. Fischer, Angew. Chem. 48, 394 (1935).

UNSAPONIFIABLE MATTER

If the original sample being analyzed is of unknown origin and an approximate value of (0.3-0.4 per cent) for the unsaponifiable matter cannot be assigned to the water-insoluble material, saponify 3-4 grams with 50 ml. of 0.5N alcoholic KOH and proceed in the usual manner. (Official and Tentative Methods of the American Oil Chemists' Society, p. 30b, Revised 1940.)

MOLECULAR WEIGHT OF THE ESTERS

Should the fatty acid mean molecular weight of the mixed esters be unknown, then the fatty acids must be prepared by the method in Official and Tentative Methods of the American Oil Chemists' Society, p. 30a, using approximately 5-10 gm. of the water insoluble and a proportionately smaller volume of glyceryl caustic.

An acid value is then determined on the prepared fatty acids and the mean molecular weight of the fatty acids calculated using equation (8).

CALCULATIONS

- imes 100 = % Water Insoluble wt. of sample (2) ml. thiosulphate (sample) \times 100 = 78% ml. thiosulphate (blank) m. w. glyco (3) (mls. Na₂S₂O₃ blank — mls. Na₂S₂O₃ sample) × N of Na₂S₂O₃ × 2 = % Combined wt. of sample \times 10 glycol as such % Glyceryl monoester or % Glycerine or Glycol 100 = Corrected values 100—(%FFA + %H₂O + % Unsaponifiable in the water insoluble) Found (5) 100-[% Monoester (corrected) + % Diester] % Diester × 92.09 + m. w. Triester m. w. Diester % Monoester (corrected) × 92.09 = % Combined Glycerol Found (corrected) m. w. mongester (6) (100-% Monoester) % Monoester X m. w. Glycol + × m. w. Glycol = % Combined Glycol Found (corrected) m. w. Diester m. w. Monoester % Water Insoluble*** (7) % Ester on "Water-insoluble" basis X - = % Ester on "as is" basis 100 5&1 × 100 (8) Mean molecular wt. of fatty acids = acid value (as % KOH)

[9] Mean molecular wt. of ester = x M. M. W. Fatty Acid + M. W. polyalcohol -x M. W. H₂O x = 1, 2 or 3 depending on whether it is a mono-, di- or

triester respectively.
***More accurately, water insoluble minus water minus FFA minus unsaponifiable.

Equation (9) under "Calculations" will then give the molecular weight of the different esters to be used in equations (5) and (6).

For those who prefer a graphical method of calculation, equation (5) may be solved with the aid of a triangular diagram, as in Figure II. First a horizontal straight line is constructed corresponding to the per cent monoglyceride. (33.33 per cent of glycerine monolaurate in the Figure). The other line is obtained by joining two points on the right and left side of the diagram which are found as follows.

but this disadvantage is unavoidable in any analysis of this kind.

3. Pure propylene glycol esters have not been analyzed in this manner, but estimations of commercial samples have been made and the results found to be in good agreement with those obtained by acetylation methods.

Table 3 contains the analyses of some commercial products in common use.

5. The proposed method affords a more accurate estimation of the purity of re-crystallized esters than the saponification value for the reasons

Soap Exports in 1946

According to C. A. Peterson, Chief of UNRRA's Fats, Oils and Som Section, requirements of soap for the period July 1 to Dec. 31, 1946, are approximately 45,000 tons. Of this amount, 25,000 tons is being negotiated outside the United States. UNRRA is considering the purchase of the remaining 20,000 tons from synthetic soap sources.

A trial order for 2000 tons has already been placed to conserve soap fat in this country.

Kenneth Mainland, Chief of Edible Oils Division, Production and Marketing Administration, Department of Agriculture, stated at a recent hearing before the Senate Special Committee to Survey Problems of Small Business Enterprises in the United States, that:

The government has committed itself to export 375,000 long tons of fats and oils during the calendar year 1946, 64,600,000 pounds of which is to be in the form of soap. Relief and commercial exports are included in the total figure.

Fats and oils in soaps to the extent of 14,500,000 pounds are scheduled for export during the third quarter of the year, and 14,200,000 pounds during the fourth quarter, making a total of 28,700,000 pounds for the second half of the year.

No part of this planned procurement can be diverted for domestic

The following statement was made by Mr. Mainland on commitments for 1947: "A new set of commitments, corresponding to the 375,000 tons calendar year 1946 commitment, are not to be undertaken in 1947. Our exports after Dec. 31, 1946, according to the policy of the Department of Agriculture, will consist only of rather nominal quantities of fats and oils to be used-

To exchange for specific oils and fats essential to our own economy; to meet the needs, on a historical basis, for such Central American and Caribbean countries as we have always supplied; and small amounts to handle projects in various parts of the world being carried under Government sponsorship, such as the rubber and petroleum programs."

	Right Side	9209
100 ×	% combined glycerine -	m. w. triester
100 ×	9209	9209
	m. w. monoester	m. w. triester
	Left Side	
	~	9209
100 × —	% combined glycerine -	m. w. diester
100 /	9209	9209
	m. w. monoester	m. w. diester

In the example shown, these equations become

outlined in "The Problem." Pure glycerine esters may have two crystal-

100 ×	22.73 — 14.42	D: 1.0:1
$100 \times$	= 43.4% $=$ 33.58 $=$ 14.42	Right Side
100 ×	22.73 — 20.18	T 6. C. 1
$100 \times$	= 19.0% $=$ 19.0% $=$ 33.58 $=$ 20.18	Left Side

The straight line joining these two points intersects the horizontal line at a point which corresponds to the composition of the mixture.

RESULTS AND COMMENT

1. In order to test the method thoroughly a number of pure esters of glycerine and of glycol were analyzed separately and in mixtures. Table 1 summarizes the results obtained with glycerine laurates and Table 2 those of the corresponding esters of ethylene glycol. As can be seen in the tables, the unit errors are nearly all within one per cent.

2. The correction factors which are necessary for highest precision involve some cumbersome calculations, line forms8 and a mixture of the two may give misleading melting points. This chemical method obviates such a difficulty.

6. In applying the method to highly unsaturated esters, there is some danger that erroneous results may be obtained because of the reducing effect of the double bonds. This effect is being studied.

¹ W. D. Pohle, V. C. Mehlenbacher and J. H. Cook, Otl & Soap 22, 115 (1945).

2 Malaprade, Eull. Soc. Chim. 43, 683 (1928).

3 Malaprade, Eull. Soc. Chim. 1, 833 (1928).

4 Malaprade, Bull. Soc. Chim. 1, 833 (1934).

2 Proc. Chem. Soc. (1890) 72, 91; Journ. Soc. Chem. Ind. (1890) 660.

5 L. B. Smith and H. Mathews, Oil & Soap 17, 58 (1940).

7 Nelson, De Courey, Mathews and Robertson, Oil & Soap 15, 10 (1938).

8 Malkin, T., El Shurbogy, M. R., and Meara, M. L., J. Chem. Soc. 1937, 1409-13.

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1282 SUNSET BOULEVARD

FLAVORS

Pungent Compounds Used in Flavoring

Interest in pungent compounds has flagged but will undoubtedly arise again as interest in flavor synthetics increases

by MORRIS B. JACOBS, Ph.D.

Professor of Chemical Engineering, Polytechnic Institute of Brooklyn

N previous articles in this section it was noted that pungency may be considered a characteristic taste sensation, that is, there are probably a separate set of cells capable of being stimulated by pungent compounds.1 There are a number of these compounds occurring naturally. Some of these naturally occurring substances have been synthesized and there are still others, wholly synthetic, which have marked pungent properties. The principal compounds of this group are piperine, chavicine, capsaicin, gingerol, shogaol and synthetic homologues of these compounds.

PIPERINE

Pepper is considered to contain three components which contribute to its flavor. These are a colorless or slightly yellow volatile oil composed of terpenes principally 1-phellandrene, piperine, and a resin. The oil is not pungent but the resin which is termed at times, chavicine, is very pungent.

Piperine, an alkaloid, is considered to be the principal compound contributing to the pungency of pepper, and the pungency of the resin of pepper, as noted above, is also considered to be due to residual piperine. The concentration of piperine in pepper hydroxide, it yields piperidine and potassium piperate whereas acid hydrolysis yields the corresponding

varies considerably. Thus concentrations of from 2 to 8 per cent have been reported. Piperine is a feebly basic substance. It crystallizes well and the crystals melt at 128-129 deg. C. Piperine has a density of 1.193. It is only slightly soluble in cold water but 6.1 grams is soluble in 100 ml. of alcohol at room temperature. Piperine has been synthesized from piperyl chloride, the acid chloride of

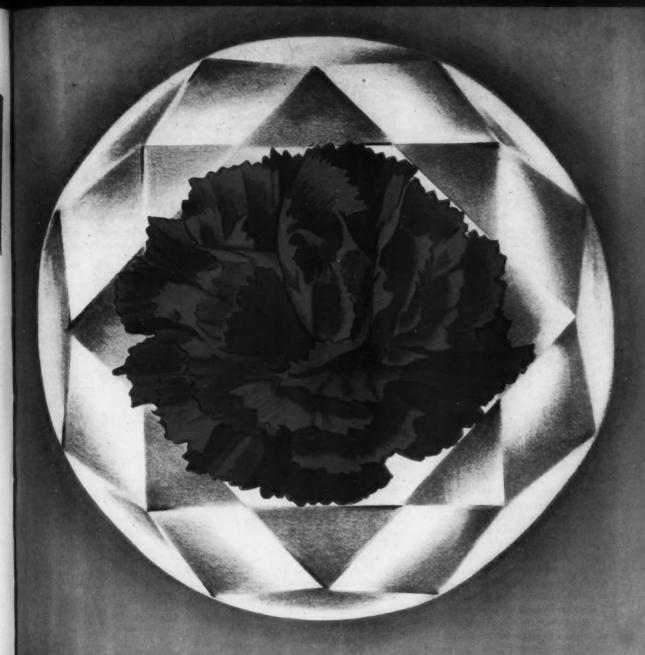
piperic acid, and piperidine. If piperine is heated with alcoholic potassium piperidine and piperic acid.

It is interesting to note that some use has been made recently of piperine as an insecticide.²

Piperine may be extracted from pepper by exhausting the pepper with strong alcohol. The solvent is removed by distillation and then the oleoresin is saponified with sodium hydroxide solution. After re-extraction with boiling alcohol, the extract is filtered through charcoal and the alkaloid is permitted to crystallize. It may be recrystallized from alcohol.

CHAVICINE

The pungency of pepper is associated with the oleoresin of pepper rather than with piperine alone. This resin contains another pungent tast-



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th

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ing principle which has been named chavicine. This compound is an uncrystallizable alkaloid isomeric with piperine for it is a piperidide of chavicinic acid which is a geometrical isomer of piperic acid.

CAPSAICIN

The various species of Capsicum, such as Capsicum frutescens L. (Cayenne pepper) Capsicum annuum (paprika), etc., contain an alkaloid of the aromatic amine type which is a benzylamine derivative. There is a considerable variation in concentration between varieties considered as hot and there is even marked variation within some varieties themselves.3 Thus various investigators have reported from 0.1 to 1 per cent of capsaicin in different varieties. Capsaicin is a crystalline substance of extreme pungency, melting at 64.5-65.5 deg. C.4 Capsaicin may be extracted from the peppers by use of petroleum ether, from which it can be extracted in turn by use of dilute alkali solution. The alkaloid can then be precipitated by passing in carbon dioxide.

Capsaicin has certain irritating properties in addition to its pungent properties for it was considered for use as a sternutator or nose and throat irritant in World War I. It was also considered for use as a warning agent in manufactured gas and a few experiments were tried at Edgewood Arsenal where it was incorporated with the manufactured gas to serve as an additional warning agent.⁵

Considerable work was performed on capsaicin, its homologues, and on substances related to capsaicin in order to determine the degree of pungency and the relation of structure to pungency. The earlier work was possibly performed in order to ascertain the degree of irritant properties as well, since there was much interest in sternutators in World War I.

Capsaicin is a condensation product of vanillyl amine and a decenoic acid, 8-methylnon-6-en-1-oic acid: C₉ derivative and then decreasing again as can be seen from the following table:

Comparative Pungencies of Acylvanillylamides

n-Hexylylvanillylamide	5	
n-Heptylylvanillylamide	25	
n-Octylylvanillylamide	75	
n-Nonylylvanillylamide	100	
n-Decylylvanillylamide	50	
n-Hendecylylvanillylamide	25	
n-Dodecylylvanillylamide	25	
Hendecenylvanillylamide	25	

Capsaicin is considered to have a pungency equal to 100. This regular increase and decrease in pungency is a phenomenon commonly observed as in the odor intensity of a given homologous series. For instance, the odor intensity of the alcohols increases up to amyl alcohol and then decreases with increase in length of the carbon chain.

METHYL CAPSAICIN

Nelson stabilized capsaicin by methylating the hydroxyl group to form methyl capsaicin. This was only moderately pungent. It melted at 77-78 deg. C. On the other hand, dihydrocapsaicin is equal in pungency to capsaicin.

ACYLATED ISOBUTYLAMINES

The dependency of the pungency of the acylated isobutylamines on the length of the carbon chains, the position of the double bonds and the character of the acid radical was studied by Mitter and Ray⁸. They found that the isobutylamides of 2-heptenoic and 2-nonenoic acids were

tion. Benzisobutylamide was very pungent but anisisobutylamide was without pungency. They concluded that pungency decreases with the length of the acyl chain and the remoteness of the unsaturation from the NCO group.

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ACYLBENZYLAMIDES

A number of acylbenzylamides were synthesized by Jones and Pyman⁹ who concluded that the shape rather than the weight of the sidechain is the important factor in pungency.

ACYL GUAIACOL AMINES

Certain of the derivatives of guaiacol amine have relatively strong pungency. To For instance, n-heptylyl, 2-nonenylyl, decylyl and hendecylenyl guaiacolamides all have pungencies of an order that is sharp in concentrations of 3 mg. per 50 ml.

GINGEROL, SHOGAOL, ZINGERONE

A pungent principle has been isolated from ginger which has been termed gingerol. 11, 12 According to Nelson, gingerol is a very pungent yellow oil which has a density of 1.10713, a specific rotation of 12.9 deg., a refractive index of 1.5212, and a methoxyl content of 9.26 per cent. Gingerol is readily decomposed into zingerone, a ketone, and enanthalde-

$$HO$$
 $CH_2NHCCH_2(CH_2)_3CH:CHCH(CH_3)_2$
 O
 O
 $Capsaicin$

Of the acylvanillylamides, nonylylvanillylamide is the most pungent, the pungency increasing up to the equally pungent with heptoisobutylamide next in pungency. This decreased to some extent with saturahvde.

Zingerone¹³ has been identified as 1 · (4-hydroxy-3-methoxyphenyl) · 3-butanone. It has been synthesized from vanillin and acetone by reducing the resultant product with hydrogen and platinum to yield the ketone as shown just above.

Zingerone is very pungent and it has a sweetish odor. It melts at 40-41 deg. C. The homologues of zingerone, namely, the propyl, butyl, isobutyl, and tert-butyl derivatives are all strongly pungent. Related compounds such as 2-hydroxystyryl methyl ketone, HOC6H4CH:CHCOCH3, 4-hydroxy-3-methoxystyryl phenyl ketone HOC6H3 (OCH3) CH:CHCOC6H5, and similar ketones are also very pun-

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Ginger loses its pungency when heated with alkaline hydroxides while the pungency of capsicum is not destroyed by this treatment.

Shogaol16, 17 is another pungent tasting substance which has been isolated from ginger and it is related to gingerol. It can be synthesized from zingerone and hexylaldehyde and has been shown to be 1-(4-hydroxy-3methoxyphenyl) - ethyl-1,2 - heptenyl

PARADOL

Nelson¹¹ isolated a pungent material from grains of paradise, that is, melegueta pepper or Guinea grains. This was a yellow oil which had a density of 1.0690, a specific rotation of 9.2 deg., a refractive index of 1.5232 and a methoxyl content of 10.9 per cent. The pungency of paradol is not destroyed by boiling with alcoholic potassium hydroxide.

TURMERIC

Turmeric, which is principally used as a dye, is the dried rhizome of Curcuma longa L., a perennial herb of the ginger family. This spice contains from 4-6 per cent of a volatile oil of which alcohols and ketones are components. It is used as an ingredient in prepared mustard and in curry powder to give an additional pungent taste and flavor.

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FLAVORED NOTES

Since confectionery products and bakery products remain in contact with the taste buds, the tongue, and the other sensory parts of the mouth for longer periods of time than beverages do, it is preferable that flavors that are to be used for confectionery products and bakery products be more nearly "true fruit" or "natural" than is the case with flavors solely used for beverage purposes. This is a consequence of the transitory contact that beverages have with the organs that determine their flavor. -M. B. J.



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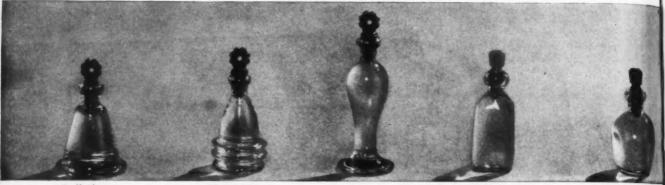
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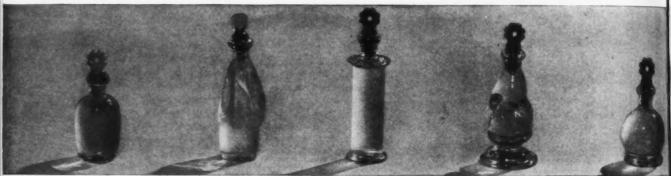
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Square 1 dram only

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Aromatic Chemicals for Flavoring Extracts

The extensive chemical research in aromatic chemicals has brought about many changes and new approaches in the development of flavors

by DAVID E. LAKRITZ, B.S.

Chief Chemist, Florasynth Laboratories, Inc.

IT may be interesting to learn that most of the aromatic chemicals that are being used today for flavors are comparatively recent developments. Small indeed was the number of these chemicals used for flavoring in the middle of the last century. They consisted mainly of several esters, called ethers at that time; even now sometimes called commercially by that name. These aromatic chemicals first attracted attention at an exhibition in London in 1851. The list, as known at that time, consisted of amyl acetate, amyl butyrate, amyl valerate, ethyl acetate, ethyl benzoate, ethyl butyrate, ethyl formate, ethyl nitrite, ethyl oenanthate, methyl salicylate, and perhaps a few others, such as acetaldehyde.

FRUIT ESSENCES

olors

proof

y Bottle

1/2 ounce

By using individual or various combinations of the above-mentioned esters, flavor manufacturers of the last century produced the "Fruit Essences" as they were then called. Measured by old standards, these were supposed to have produced good imitations of the natural fruit flavors; however, measured by modern standards, these were poor imitations indeed.

At the beginning of this century, the aromatic chemicals for flavors began to be drawn from many other different classes of chemicals besides esters, viz., aldehydes, ketones, and lactones. Without going into detail about the synthesis of these groups of chemicals, we will just mention that aldehydes and ketones are produced by oxidation of alcohols, while lactones (inner esters) are made by eliminating a molecule of water from

a molecule of a hydroxy-derivative of a higher fatty acid, such as hydroxyvaleric acid, forming valero-lactone.

SYNTHETIC ALDEHYDES

The most important synthetic aldehydes introduced at first were as follows:

Benzaldehyde which is of the same chemical composition as the Bitter Almond Oil produced from bitter almonds, cherry pits, peach and apricot kernels, etc. It can be produced by various methods-one of them is by oxidation of benzyl-alcohol. It is used mainly in the manufacture of artificial almond, artificial cherry, and other pit-like flavors. Later on, P-tolvl aldehyde was introduced, which although of a somewhat different character than benzaldehyde, is nonetheless a valuable aromatic chemical in the manufacture of cherry and other similar type flavors.

Cinnamic aldehyde, which occurs also naturally in cinnamon and cassia oils, to the extent of about 85 per cent, is produced synthetically by the condensation of a mixture of benzal-dehyde and acetic aldehyde, in the presence of sodium hydroxide (Claisen's Reaction).

Decyl aldehyde is another valuable aldehyde used in the production of artificial citrus flavors, particularly orange.

Of the group of ketones first introduced were the ionones (alpha, beta, and methyl ionones), which are very important products in the manufacture of imitation raspberry and other berry type flavors. Later, diacetyl (a di-ketone), appeared on the market, and proved to be invaluable for use in the manufacture of butter, butterscotch and caramel flavors.

Of the lactones, the most important one introduced at first was the γ-undecylactone, commercially known as aldehyde C₁₄. This is a very useful chemical for the production of peach and apricot flavors. The γ-undecylactone is produced by the treatment of undecylenic acid with concentrated sulphuric acid. Later introduced was γ-monyl-lactone, commercially known as aldehyde C₁₈, an excellent aromatic chemical for artificial cocoanut flavors. γ-nonyl-lactone is prepared from γ-hydroxy-pelargonic acid in the presence of sulphuric acid.

Still later, at about the end of the first quarter of the century, ethyl methylphenylglycidate appeared on the scene, as well as ethyl phenylglycidate (both commercially known as aldehyde C₁₆). These are now practically indispensable for the preparation of the better grades of imitation strawberry flavors and likewise used successfully in raspberry and other berry type flavors. The glycidates are produced by the reaction of halogen esters such as ethyl chloroacetate with ketones in the presence of alkali.

SYNTHETIC ETHERS

Of the ethers, the most important one is the phenolic ether—anethol, which is now made synthetically on a commercial scale. It is of the same chemical composition as the natural anethol, which is present in Anis seed and Star Anis oils to the extent of 80 to 90 per cent.

During the last decade or so, many newer esters were introduced, such as the malonates, viz., ethyl malonate, ethyl butyl-malonate, ethyl isopropyl



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malonate, and ethyl-methyl-malonate, etc., very good aromatic chemicals in the manufacture of apple, grape and wine-like flavors; and esters of the benzene-ring type—for example, the phenylacetic acid esters. Notable among these are benzyl phenylacetate, octyl phenylacetate, amyl phenylacetate, and such cyclic esters as cyclohexyl phenylacetate, which have very pleasant honey-like notes.

Of most recent development are the keto-esters, which could be considered both as ketones and esters, because of their particular chemical structure; and the cyclo-compounds, which are compounds based on a closed ring, which is similar to the benzene-ring but unlike it in that the chains contain varying numbers of carbon atoms.

Among the new keto-esters, we find ethyl acetoacetate, used in cherry and other flavors requiring a green note, ethyl butyrobutyrate, which is excellent for black currant flavor, and possibly blackberry, ethyl acetosuccinate for cherry, peach and plum flavors, and ethyl caprovlocaproate, which can be used in artificial cognac, grape and wine-like flavors. Representative of the cyclo-compounds are the cyclohexyl esters, such as cyclohexyl acetate for banana, raspberry and blackberry flavors; cyclohexyl butyrate, which is useful in currant and possibly strawberry and grenadine flavors; and cyclohexyl cinnamate for peach, apricot, or prune flavors.

NEW KETONES INTRODUCED

There are also several new ketones which have recently been introduced, for example: methyl amyl ketone, distinctly banana-like in odor and taste; and butyrophenone which can be used in walnut, hazelnut and other nutlike flavors.

In addition to the above-mentioned groups of recent introduction, are the acetals, representative of which would be acetal, which is made by condensation of alcohol and acetic aldehyde; this is valuable in nut-like flavors. Even more important is ethyl orthoformate, which can be considered both as an acetal and as an ester, and which has a very close resemblance to the flavor of carrots and honey. This product is made by treating chloroform and absolute alcohol in the presence of sodium.

Most of the aromatic compounds mentioned above have been referred to from time to time in the literature, while others were produced recently for the first time, we believe, in our own research laboratories, since we have found no references to them in the literature.

We would like to point out that all these odoriferous chemicals are so powerful in taste and aroma, that very small quantities or trace amounts are required to produce the desired sensation.

Quantities used in the finished product vary from one in ten thousand to perhaps one in one hundred thousand, and even less. However, at this moment, we would like to point out that while these aromatic chemicals are very valuable, they are of value only in experienced hands, in the hands of those who have spent a large part of their lifetime constantly developing and improving flavoring extracts. While as you can readily see from the above, tremendous progress has been made in developing these aromatic chemicals, in our opinion the field is still wide open for further

Beet-Sugar Factory

A new beet-sugar factory is under consideration for construction at Brooks, Alberta, Canada, to service the irrigation district of which that town is the commercial center. The anticipated cost is \$1,200,000. This plant would be the third beet-sugar factory in Alberta and the fourth in the Prairie Provinces.

Vanilla-Bean Exports

Exports of vanilla beans from Tahiti (Society Islands, French Oceania) in the calendar year 1945 totaled 224,-294 pounds, valued at \$472,390, according to the Tahiti Customs authorities. Of that amount the United States obtained 156,864 pounds, valued at \$327,776, or about two-thirds of the total exports. Australia was the second largest purchaser, taking 50,-576 pounds, valued at \$110,486, somewhat more than one quarter of the quantity exported during the year.

During 1945 about 946 pounds of vanilla beans, valued at \$2,059 were sent to France. This was the first shipment since 1940. The beans were sent by parcel post inasmuch as no vessel of the French merchant marine has called at Papeete since 1940.

It is expected that when normal commercial relations are restored the greater part of the vanilla beans exported from the colony will be sent to France, as was done before the war, unless there is found to be a higher market in the United States.

Only members of the official vanilla organization may export vanilla beans from French Oceania. However, this restriction is not applied to individuals making small shipments by parcel post.

The accompanying table shows exports of vanilla beans from French Oceania in the years 1939 to 1945;

Year	Quantity Metric tons	Value Dollars	Average rate of exchange per dollar Francs
1939	206	515,000	41
1940	. 118	431,266	45
1941	214	1,401,977	45
1942	. 65	445,933	45
1943		598,777	45
1944	. 154	640,090	50
1945	. 104	475,000	50

Freight rates on vanilla beans during 1945 from Papeete to San Francisco were 5 cents per pound on shipping green weight, plus 13 per cent.

The rate of exchange remained fixed during 1945 at about 50 francs to the dollar.

The government of French Oceania collects a straight export tax of 5 per cent ad valorem plus all of the difference between the price allowed the exporters by the government and the price actually received from abroad for the vanilla beans exported.

The trade in Tahiti estimates that the carry-over at the end of December, 1945, was about 60 tons. It is understood that large contracts have been made for the shipment of vanilla beans to France.

Dried vanilla beans are among the important exports from Tahiti. The vanilla beans are grown principally by the Polynesian natives of the Society Islands. The plantations usually are in small and irregular plots either on the narrow coastal plain or in the valleys of the lower hills. The work is carried on as a family industry and is shared by all the members, including the children.

The drying and curing processes are carried on almost entirely by Chinese who buy the beans from the producers. Only persons holding government licenses are allowed to buy and cure the beans.



by ARNOLD KRUCKMAN

WHATEVER price controls finally are made law, it is almost certain that essential oils and practically all the materials used by the flavors. soap, cosmetics and toiletries industries, will pass under administration of the Department of Agriculture. The Act which the President vetoed provided that agricultural products. raw and manufactured, should be under pricing control of the Secretary of Agriculture. The extreme breadth of the law, including even fish and fish products under the agricultural classification, was a clear indication that anything remotely capable of being identified as the product of agricultural effort would be included in the commodities to be controlled by the Department of Agriculture.

ACT UNDEFINED

How this was to be done was not so clear. The conflicts and vagueness of the Act made impossible any ready determination whether the actual machinery of the law was to be left in OPA, under the direction of the Agricultural Secretary, or whether the whole responsibility, personnel, machinery, and all was to be transferred to Department of Agriculture. If the law had been approved by the President it would have taken probably from 3 to 6 months to set up a working system. The same result probably will flow from the law that is bound to be enacted by Congress and approved by the President sometime in the next month or more. For this reason it is assumed the flavors, soap, cosmetics, perfumes, and toiletries industries will undoubtedly take the necessary advance collective steps to persuade Congress to make the law clearer when it is enacted the next time. The action is obviously sound sense because it will save the industries' time, exasperation, money, and all those factors which tangle and fuddle business when it is touched by some political activities.

PRICE CONTROL LAW

There seems small doubt that the President's stand will produce a more drastic price control law. Whether business people make the mistake of permitting prices and rents to skyrocket, or keep them in check by an unexpected restraint during the uncontrolled period, it seems certain the enormous pressure from consumers will drive the Congress to enact a law more in keeping with the Truman idea. Even before the battle begins on the Hill it is clear from the returns as reported at the telegraph offices and in the mail and on the telephone wires, as well as exasperated delegations, the consumers have been aroused, especially by the President's picture of what the Taft amendment means. The consumers after all are the huge mass who have the votes, and the votes are necessary this Fall to bring all Representatives in the House back to their cushy jobs, while two-thirds of the Senate must expose themselves to the effect of popular judgment.

EXECUTIVE POWER RESTRAINT

On the Hill they have become painfully aware that somewhere along the line they have slipped badly, and that they are now very much on the defensive. You can easily perceive they are extremely nervous about the pop-

ular sentiment that has suddenly boiled up in vast reactions. There is great possibility that the Members who already have been eliminated in the primaries, and the 33 per cent in the Senate who do not come up for election, may fight a long delaying battle in order to whittle down the President's demands as far as possible. Congress took the precaution of placing special restraints in the renewed Second War Powers Act which prevent the President from making price controls and using the war funds to make an Executive Order effective.

It is considered certain, however, that the President has other shots in his locker, and that OPA and its personnel and its regulations, will not be permitted to freeze nor will it be permitted to become inoperative during the waiting period.

DEPT. OF AGRICULTURE CONTROL

For one thing, important to the industries reflected by THE AMERICAN PERFUMER, it is sure the Department of Agriculture will swiftly resume the controls over inventories which it loaned to OPA, and which are still in effect so far as the Department of Agriculture is concerned. Just how far these powers can be exercised to make price control indirectly effective, is not yet apparent. There is considerable thought here that inventory controls will be more drastic, pending the OPA debate, and that rationing may be imposed in far more detail, much as it was during the war. Tight controls over the volume and kind of supplies are expected to discourage price uncontrol. In fact it is anticipated public sentiment may

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force resumption of many controls that have been allowed to become dormant.

IMPORT CONTROL

It is puzzling to contemplate the import control picture. When it was certain the vetoed OPA Act would come into existence, a number of international Combined Boards, controlling world allocations, and naturally having a sharp effect on prices, quit altogether, by resignation, and the Government followed promptly by wiping out the Boards and their functions as well as the regulations upon which they were founded. Several basic materials thus were removed from all international control. Public purchases, unsupported by subsidies, were cancelled. Import controls were voided. Immediately foreign buyers as well as domestic buyers began to scramble in the American market for the materials which, in each case, were appallingly scarce. In one instance, there is available less than 35 per cent of the basic materials required to keep the domestic industries functioning on a modest normal basis. Obviously the industries concerned are confronted with a period of chaos. Their leaders frequently said that there seemed no other way in which the situation could be shaken down to an eventual reorientation. The picture involved realignment of the labor situation.

A few days before the OPA Act was vetoed, it had been determined by OPA, the State Department, and other agencies, that it would be wise to set a 75 per cent increase basis upon imported essential oils, with a 1940-41 period as the yardstick. The present situation logically wiped out this plan. What may now happen is entirely foggy, and confused. Some of the clarification may depend upon what the essential oil people themselves decide to do about it, in negotiations with those who formulate the Law which finally is placed on the Statute Books.

ORDERS REMAINING IN EFFECT

Allocation and rationing orders, priority regulations, inventory controls, still in effect in CPA are L-353 affecting cane alcohol; L-355, molasses; VHP-1, the national building restrictions; L-103 glass containers and closures; M-316 and M-318, covering bituminous and anthracite coal;

M-38, lead; M-43, tin; M-81,metal containers; L-63, suppliers' inventories; L-219, consumers' goods inventories; L-355, alcohol, and many others not so directly affecting the industries in this group.

MATERIAL UNDER CONTROL

In the Department of Agriculture there is a considerable list of materials under control including: spearmint and peppermint oil, caramel coloring, caraway seed, cardamon, cloves, coriander seed, food coloring, food flavorings, food flavoring extracts, ginger, mace, vanilla beans, vanilla extract, deodorants, and others. This list is by no means complete. It is an intimation of the extent of the sleeping powers still at the disposition of the Federal Government. Glass containers are still subject to controls. Early in June OPA restored all price controls. Late in June OPA increased prices for solid fibre and corrugated boxes, after a meeting with the OPA Advisory Committee for the Fibre Box Industry. headed by E. R. Hankins. Strawboard corrugating material was given a price increase early in June to encourage production, and to fill the gap in the critical shortage of fibreboard.

TIN PRODUCTION DROP

Tin production is dropping. Nigeria, Malaya, and Bolivia, the main producers, are demanding much higher prices for the little there is available. Eighteen nations recently shared allocations made by the Combined Tin Committee, the average allocation being approximately 500 tons. Our own irreducible restricted need has been estimated this year at 65,000 tons. We will get less than 40,000 tons. The supply of lead continues to diminish, and CPA reports no relief is in sight. Less than 40 per cent of the normal supply of primary pig lead is being produced. Controlled prices, strikes, and coal shortage were contributory, but the fundamental cause is the lack of prime lead. Government seems to think, in the cautious safety of off-the-record talks. that the scarcity will increase until new sources are tapped. Copper is very critically short. Less than 33 per cent of the normal supply is being produced. Steel is expected to run less than 50 per cent of normal for the year, and the quality is not regarded

as the best. Freight cars are scarce, and growing scarcer, says ODT. Coal is still tight. The only raw material in abundant supply appears to be crude oil. Rubber is scarce and growing scarcer, reports CPA. They plan to draw the synthetic plants back into production. Aluminum, as sheet and in other forms, is abundant, but the price thus far has defeated the effort to make it widely useful. Lumber is scarce, and getting scarcer. Some producers say it is the artificial price set by OPA; others attribute it to labor scarcities, transportation troubles, and difficulty in obtaining the essential equipment.

SUGAR SHORTAGE TO CONTINUE

Sugar is scarcer. The Cubans are still playing hide and seek with our Department of Agriculture negotiators. There seems no immediate prospect that the Cuban sugar will be sold to us unless we pay a large bonus, both in terms of money and in concessions of special allocation of supplies at low prices. The Cubans fear the potential Philippine competition, and seek to spike it before it gets under way. All industrial users now receive 60 per cent of their normal sugar base. Bakers were brought down from 70 per cent to the general allotment of 60 per cent for July, August, September. The gloomy prospect is suggested that thereafter industrial users may get still less. The Senate Small Business Committee warned recently the present shortage will continue at least three years. The world production is now over 7,000,-000 tons under the pre-war norm.

INDUSTRIAL ALCOHOL

Industrial alcohol is still chiefly controlled by basic allocation. CPA continues to hope no more drastic controls will be necessary. A number of industrial fermentation alcohol plants closed during June for lack of molasses to make alcohol. The chief reason is because the Cubans are holding out the molasses. Relief shipments abroad continue to reduce the stock of fats and oils used at home as food and in industry. Department of Agriculture suggests there will be no improvement this year. Lard and tallow production is expected to drop 350,-000,000 pounds next year. We are now sending a billion pounds fats and oils to relieve Europe and Asia. Only small quantities of copra and



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crude coconut oil are coming from the Philippines. The Federal Government has withdrawn its rehabilitation unit. Brazilian castor beans, whose products are used in perfume aromatics, ointments, toilet creams, hair dressings, soaps, and similar commodities, are to be brought to Pacific Coast instead of the East, to be manufactured. OPA established a ceiling of \$120.18 per long ton; the former price was \$118 per long ton.

NAW MATERIAL SHORTAGES

Examination of the picture of world shortages in primary raw materials, makes clear why Housing Expediter Wyatt has so much difficulty in launching his program. He has \$400,000,000 to spend as incentives to makers of equipment and building materials, as well as building contractors; yet after months he has been able to place only \$5,000,000, because they plead for materials, not funds. Wyatt so far has not been able to conjure up the materials. It is the general impression here that upwards of 40 per cent of the building now going on in the United States ignores the Federal building restrictions. Apparently this black market operation caused Wyatt to launch his compliance effort.

The House Committee on World War Veterans' Legislation will shortly report H. R. 6836 which provides for the establishment and operation of Veterans' Canteens, and a supporting service of procurement and distribution. All Veterans' homes and hospitals will have the canteens with a complete range of merchandise, including cosmetics, toiletries, and all analogous merchandise. How to establish and operate a Beauty Shop is the subject of a book issued by the Government Printing Office, and sold by the Superintendent of Documents, for 30c. a copy. It supplies a broad outline, advises about locations, gives plans for the lay-out of the shop, the equipment, tells what service to stress, and how to keep records, and the type of personnel which should be em-

CHILE CITRUS FRUITS

Oranges and lemons in Chile are rapidly reaching world importance in production, according to the Office of Foreign Agricultural Relations of the Department of Agriculture. It reports that climate, soil, and topog-

raphy present a striking resemblance to the citrus fruit areas of California. Chile's citrus fruit cultivation was brought by the Spaniards with the Conquest; but apparently no real business development was launched until the Second World War. The Chilean Ministry of Agriculture is developing supporting services. Being under the Equator, winter oranges ripen in June, July and August.

MARKET IN PERU

Department of Commerce reports a non-competitive market for vanishing cream in Peru, with an excellent prospect for expansion. In Chile it found no market for skin lotions and balms, since the average annual per capita income is between \$100 and \$200 in U. S. currency. Also, the Chilean Government creates difficulties over exchange permits. On the other hand, in El Salvador there is an excellent market for toilet soap. American trade names have become familiar, and are popular. *

OIL OF LAVENDER

A very interesting report in the Industrial Reference Service series supplies much timely information about Oil of Spike Lavender (aspic), used largely in perfuming soap, as well as in eaux de cologne and in toilet waters. Late in May it was rumored 25 tons of citronella oil was shipped from Surabaya, Dutch East Indies, to New York. The same gossip brought word that an estimated 120 tons in addition was available in the Interior of East Java, and would be brought out as soon as arrangements could be made. War Assets Administration recently sold 26,000,000 two-ounce bottles of insect repellent, as used in the Pacific, to veterans in the United States. West Africa cocoa growers were given an increase of 1.08c. per pound by the British Ministry of Foods. The Argentine Government will permit export of 10 per cent of its annual olive oil production.

FLAVORING MATERIALS DEMAND

Government sources report there is an increasing demand for better quality of flavoring materials for ice cream. Fresh fruit natural flavor, color, and texture are in growing demand, particularly to eliminate the flat taste of the ice cream mix. Another report suggests lignin is a growing source of supply for the product of vanillin, also used in ice cream, confections, and baked goods. Government finds it can be applied much more widely. It imparts decided flavor to water or any similar beverage, and it neutralizes unpleasant odors. Its realistic application appears to be a product of the war. The world production in pulp and paper mills of lignin is estimated at 5,050,000 tons per year, with a practical output of 1,250,000 pounds vanillin in existing vanillin plants.

BRAZILIAN OIL PRODUCTION

Informed sources give the tip to look out for a larger production in Brazil of rosewood oil, also menthol crystals and mint oil. They also tell us that the Brazilians are growing a tree, Ocotea cymbarum or pretiosa, high in safrol, and very useful as flavoring for foodstuffs and root beer beverages. It has been made into sassafras, and into heliotropine for soaps and perfumes. It is recommended as a substitute for the prewar artificial Japanese sassafras oil. Copaiba oil is produced to scent soaps and cosmetics. Brazil also is reported to be coming rapidly to the front in producing an angelica flavoring; oil of anise; oil of camphor; caraway; citronella; eucalyptus; geranium, and lemon oil. They particularly refer to Dr. Ernest Guenther, of Fritzsche Brothers, as endorsing the practical potentials of production.

State Department asks us to tell you that the Hotel California in Paris will continue for the time being to take American businessmen who come with the voucher of the American Embassy. The restaurant will not be closed, as was reported; the French Tourist Bureau has arranged to secure enough food to keep it in operation. State Department warns the present limitation of 3 weeks per visitor may have to be reduced to 2 weeks. Reservations are not made here; they must be secured at the Visitors' Bureau in the American Embassy upon arrival, in Paris.

EXCESS PROFITS TAXES

Those who have claims for reduction of excess profits taxes now have an opportunity to present their claims to Washington at the Excess Profits Tax Council of the Bureau of Internal Revenue. The purpose is to settle claims without reference to court procedure.

\/ \/ARIETY

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- your inexpensive line, there is a
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- · Compound
- And original custom-made
- creations are a specialty
- of our laboratory
- · Have you a perfuming problem? Write us about it on
- your firm's letterhead and we will gladly
- furnish suggestions, samples and information.



Schimmel & Co., Inc. 601 West 26th Street New York 1, N. Y.

New products and processes

Imported Montan Wax

Allied Asphalt and Mineral Corp. has announced that it has arranged for the importation of genuine montan wax. The approximate specifications of the wax will run as follows:

Melting point (Kramer & Sarnow) 79.5°C.

Acid number 39.

Ester number 34.

Saponification number 73.

Insolubles in benzene 0.9 per cent. Ash content 0.3 per cent.

Montan wax in bleached form will be available when conditions permit.

Gummed Tape Chemical

"Sealtonic" has been placed on the market by Seal, Inc., as a liquid chemical that is mixed with ordinary water to be used in tape dispensers. The conditioned water is said to spread instantly and evenly over and into the layer of glue on the tape. The action, it is stated, is six times as rapid as with ordinary water.

Flowable Material Processor

A new machine has been introduced by The Cornell Machine Co. to reduce centrifugally any flowable materials to a micro- or mono-particle film without the application of mechanical pressure or without any temperature rise.

It consists of a vacuum or pressure chamber in which a disc in the form of an open bowl operates at high speed. The material for processing is fed into the spinning disc in a thin film, centrifugal force makes it flow out radially in spirals which reach a minimum thickness and maximum velocity at the perimeter of the disc. The slope and speed of the disc produce a condition of practically "all surface" for the material, for the application of vacuum or pressure, heat or cold, diffusion processes or irradiation.

The makers state that the machine can be used for homogenizing, emulsifying, reversing emulsions, dispersing solids in liquid vehicles, degassing or deaerating solutions; for evaporating, dehydrating or distilling extremely heat - sensitive materials without thermal decomposition, for impregnating, wetting, or hydrating fibres or solid particles, etc.

Pre-arranged Display Unit

A new pre-arranged display unit has been created and manufactured by the Charles Victor Co., 550 Fifth Ave., New York, N. Y., for Adrian's "Saint and Sinner" perfume.

The unit is of plastic materials and features the idea of supplying distributors with a display which is ready to put up on the counter when it is unwrapped without any assemit



The new plastic display unit

bly. Furthermore, the manufacturer is assured that his product is displayed as he wishes.

The curved front and sides are of clear lucite, while the back and bottom are of black stock. The name of Adrian appears four times—written in white letters on the black back, in gold letters on the white satin perfume box and on the bottles.

Book Reviews

YOUR HAIR AND ITS CARE, by O. L. Levin and H. T. Behrman, 184 pages, illustrated. 5 x 7½ inches, not indexed. Emerson Books, Inc., 1945, Price \$2.00.

Two dermatologists pool their efforts to write a layman's book on hair and its care. The usual information on numbers of hair on the scalp, its origin and life are given in brief form. Cleansing of the hair and scalp by means of soap is over simplified and generally believed to be a far more complicated process than here given. It is a mystery to this reviewer how the inclusion of an egg to the shampoo water actually prevents dryness (of hair and scalp presumably). Page 48 which follows this, is a confused story on shampoo composition and action. On page 69 it is said that "lead . . . is a malignant poison and strictly to be avoided" in hair dves. Yet lead hair dves are considered one of the safest hair dyes. It is rare that an allergy occurs, and there are few if any reports on lead poisoning resulting from the use of a lead hair dve. This is not true of some other metallic hair dves, nor of coal tar dves.

The sections dealing with the dermatology and hair structure are good. But like all of us who stray afield, the authors get into trouble when discussing cosmetics used on hair. For example it is questionable if scar tissue resulting from use of a barium sulfide depilatory is due to barium poisoning rather than to the alkalinity. The story on wetting agents and sulfonated oils is confused and misleading.

To write a book on a highly scientific subject, in language understandable to the layman is a Herculean task. To attempt to do so on controversial aspects of such a science, is indeed bravery. To succeed in doing it, is unusual.

If the authors had dealt with hair and let the cosmetic side alone they would have come a lot closer to realizing true success in their endeavor. Yet they would have been guilty of omission. So, if for nothing more than the courage to be criticized, the authors deserve appreciation and thanks

The book is well written, in clear, understandable language. The question and answer section at the back is an excellent addition. The book would be more useful if it were indexed.

M. G. DENAVARRE

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In Stainless Steel, Monel Metal, Bronze, etc.

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Requires exceptionally small floor space. For example, a 600 gals, per hour filter complete with motor and pump requires only a 9" x 20" floor space—a 2000 gals, per hour unit requires only 12" x 24" of floor space.

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OUR NEWLY ENLARGED FACTORY AND FOUNDRY

Among our friends

Charles S. Munson, president of Air Reduction Co., Inc., and chairman of the board of U. S. Industrial

Chemicals, Inc., New York, N. Y., has been elected president of the Manufacturing Chemists' Assn. Mr. Munson was chosen at the association's annual meeting, in Skytop, Penna. Others elected were: Leonard



Charles S. Munson

Beale, president of Pennsylvania Salt Co., and Harold Ingraham, president of General Chemical Co., vice-presidents; George Merck, president of Merck & Co., chairman of the executive committee, and Lamont du Pont, chairman of E. I. du Pont de Nemours & Co., vice-chairman; James W. McLaughlin, president of Bakelite Corp., treasurer, and Warren Warson, Washington, D. C., secretary.

George Cadgene, recently discharged from the Army, has returned to his job with Givaudan-Delawanna, Inc., New York, N. Y., where he is assistant to Dr. G. A. Geiger, purchasing agent. During most of his service in the Army, Mr. Cadgene was assigned to the atomic bomb plant at Oak Ridge. After the Hiroshima bombing, he was engaged in writing historical documents dealing with the particular installation in which he worked.

Arthur J. Connolly, manager of Helfrich Laboratories of New York, Inc., New York, N. Y., for several years, has resigned and is enjoying a well-earned vacation. His plans for the future will be announced later.

Harold Noble has been elected vice president and John Dabney Penick has been elected a member of the board of directors of S. B. Penick & Co., New York, N. Y. Mr. Noble has been associated with the company for 29 years and has been manager of the insecticide division since the department was established a decade ago. J. D. Penick was graduated from the University of Virginia in 1928 and has since been in the investment banking business. He entered the Army as a private in 1942 and retired last December with the rank of major following two years of overseas service. He is a partner in the brokerage firm of A. M. Kidder & Co.

Maurice G. Couderchet, of Naugatuck Aromatics division of U. S. Rubber Co., New York, N. Y., returned recently after a two and one-half month stay in France, where he visited Paris and Grasse. He attributed the slow return to normal production to lack of coal and transportation.

M. Martin Maglio formerly manager of the pilot plant of the Advance Solvents & Chemical Corp., New York, N. Y., has been promoted to the position of director of the Jersey City laboratories and pilot plant.

Madeline M. Ansbro has resigned as assistant secretary of the National Beauty and Barber Manufacturers' Association. Miss Ansbro has been manager of the New York, N. Y., office since the association was organized in October, 1942.

David M. Meeker was elected president of the Purchasing Agents Assn. of New York, succeeding H. W. Macintosh, at the annual meeting which took place June 18. Mr. Meeker is associated with Revlon Products Corp., New York, N. Y. Other officers elected were: Vice-presidents, Harold G. Butterfield and Donald H. Lyonsl; Treasurer, Edward B. Fielis. Members of the executive committee are: A. J. Kelly, Charles O. Minot and Howard M. Van Cleaf.

Henry W. Miller has become chief chemist and production manager of House of Hollywood and Cosmetic Products Corp., Los Angeles, Calif. W. T. Riley has been appointed to represent Gaston de Paris, Inc., New York, N. Y., in New England and New York State. Mr. Riley comes to the organization after three years in the Armed Forces.

John F. Neill has been made assistant secretary of Merck & Co., Rahway, N. J. He joined the Merck



John F. Neill

organization in 1935, after graduation from the University of Pennsylvania, and has been manager of the New York branch since Jan. 1946. Mr. Neill started in the merchandising and sales department, and

advanced to the position of senior drug salesman in the New York area before entering the Naval Reserve in Aug. 1942. He served as a lieutenant (jg) during the war, returning to the company in May 1944.

R. C. Ringgold, assistant to the president of Magnus, Mabee & Reynard, Inc., New York, N. Y., has been discharged from St. Clare's Hospital, and is spending a period of convalescence in his home in Shepherdstown, West Virginia. He is expected to be at his desk again about July 8. Mr. Ringgold has sustained an injury of three fractured ribs when he slipped and fell down a flight of stairs last May 24.

Dr. Clement Lee Huyck has been appointed professor of pharmacy of the Columbia University College of Pharmacy, New York, N. Y., to succeed Prof. Curt P. Wimmer, professor emeritus.

Miss M. Van den Bergh, assistant treasurer of Gerard J. Danco, Inc., New York, N. Y., had the pleasure of being a guest at the party given by Usines Maurice Blanchet for the inauguration of the new Worth plant at Suresnes, Paris, during her recent trip to Europe. The occasion was marked by a reception given in a beautifully flowered hall where everyone enjoyed tasty delicacies and champagne. The guests also had the opportunity to visit the newly equipped plant.

1820--1946

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The ever increasing number of perfumers who depend upon our organization to meet their requirements for basic perfuming materials is ample proof that the test of time has revealed their sterling qualities.

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Sole agents for Roure-Bertrand Fils, Grasse (A.M.) France and Justin Dupont, Argenteuil (S.& O.) France Melvin Rivard has been appointed vice-president and general manager of Milkmaid Cosmetics, Inc., New

York, N. Y., Prior to his new post, Mr. Rivard was general operations manager of Lord & Taylor, and previous to that had been a divisional merchandise manager of that store. Before that, he was advertising



Melvin Rivard

manager and assistant to the vicepresident and general sales manager at Montgomery Ward & Co. Mr. Rivard entered the retail field with J. L. Hudson Co., where he spent three years as a member of the advertising staff.

H. W. Reynolds has been promoted from assistant general counsel to general counsel of Colgate-Palmolive-Peet Co., Jersey City, N. J. He succeeds Mason Trowridge, who has retired after thirty years' service. Mr. Reynolds joined the company in 1943, and was made assistant counsel in 1944.

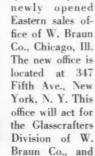
David J. Stewart has been appointed assistant sales manager of Yardley of London, Inc., New York, N. Y. Mr. Stewart has been associated with the firm for the past eighteen years as New York representative. He was educated at Brooklyn Preparatory School and Fordham University, and before joining Yardley was with United States Rubber Co. and later with the United Carr Fastener Co.

Benjamin M. Hines has been made advertising manager of Alfred D. Mc-Kelvey Co., New York, N. Y. He was formerly sales promotion manager of the company, and prior to that was assistant to H. S. Richardson, chairman of the board of the Vick Chemical Co.

H. W. Roden, vice-president of American Home Products Corp., New York, N. Y., and spare-time novelist, chalks up "Wake for a Lady" as his fourth mystery story published last month by William Morrow & Co. One of the most consistent part-time authors writing in this country, Mr. Roden produces a new book every eight months in spite of his multiple activities as an executive or director of twelve leading corporations in the food, drug and cosmetic field. His initial effort, "You Only Hang Once," published in 1944, was the largest selling first novel ever sponsored by Morrow.

Kay Jonasson has been appointed director of a new training department of Jacqueline Cochran, New York, N. Y. She has been associated with the organization for some time acting as special representative covering the Eastern territory. Before joining the company, Miss Jonasson was with Lord and Taylor, and prior to this with Strawbridge and Clothier.

Arthur A. Friedberg, who has just received his discharge as a major from the U. S. Army, heads up the





its offerings of ceramic work, glass-stoppering, styling and polishing, and other decorative effects upon glass containers. The creative art and packaging department of the Chicago office will be at the disposal of the New York branch:

James A. Barnett has been elected vice-president and general manager of the Pepsodent Division of Lever Brothers Co., Cambridge, Mass.

Roger W. de Vries has joined the export department of Lentheric, Inc., New York, N. Y., and will leave shortly for Buenos Aires to take up his duties as resident manager of Argentina, Chile, Uruguay and Bolivia. He was formerly associated with Winthrop Products, Inc., in an executive capacity in South America and has just completed his seventh year in the drug and cosmetic business in that area.

Luis deHoyos, mayor of Monticello, N. Y., was reelected a member of the Executive Council and again



Luis de Hou

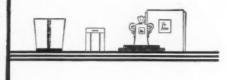
reappointed as
the New York
State Mayors' Reception Chairman for Distinguished Latin
American Guests
at the June 2
conference of
mayors and municipal officials
held in Rochester, N. Y. The

reappointment of Mayor deHoyos to these highly honored positions is not only complimentary to him but also to his municipality. It will be remembered that Mayor deHoyos made an extended trip to South and Central America some time ago where he represented as technical advisor the United States delegation to the Inter-American Municipal Congress. He was also selected as technical advisor to the Congress itself. His trip was arranged by the U. S. Department of State.

Leonard Allen and John de Meo have joined the Felton Chemical Co., New York, N. Y., sales force. Both are ex-service men. Robert Burke has joined the firm's Chicago office.

Mrs. Angele McHenry and S. Bayard Colgate were married recestly is the chapel of the Central Presbyterian Church. Mr. Colgate is chairman of the board of the Colgate-Palmolive-Peet Co., Jersey City, N. J. He is the son of the late Sidney Morse Colgate, former chairman of the board of the same company. He is an alumnus of Yale and was married in 1924 to Miss Anne Burr. The marriage ended in divorce earlier this year.

William Hausberg has been appointed advertising manager of Lehn & Fink Products Corp., New York, N. Y., to succeed Dorothy Cocks, who is retiring from business after thirteen years in that position. Mr. Hausberg has been affiliated with Lehn & Fink since 1936. He served as a Lieutenant in the U. S. Navy, and was discharged after three-and-a-half years of duty, most of which was served in the Pacific.



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Benzylidineacetone
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NEWS and EVENTS

Thioglycolate Manufacturers Form Association

Officers of three companies manufacturing thioglycolates (Evans Chemetics, Inc., Summit Chemical Products Corp., and Stanton Laboratories, Inc.) met with representatives of 17 beauty supply firms last month to form The Cold Wave Manufacturers' Assn. The meeting was held June 18, at the Hotel Shelton.

A fund was established to meet the costs of employing a recognized physician to make skin tests, and to do scientific investigations on cold wave solutions. It was also decided to set up a public relations system. One of the chief objectives of the new association is to cooperate with the Food and Drug Administration.

At the time of the meeting, only a treasurer was elected. He is Burton E. Donaghy, and is also associated with the National Beauty and Barber Manufacturer's Assn. Other officers will be elected at a subsequent meeting, the date of which is not yet set. Notice of this meeting will be sent out by mail.

Mexico Cancels Numerous Trade Marks-Barring Import

A long list of medicinal and allied products the registration of which has been cancelled by the Ministry of Health of Mexico was published in the Diario Official for May 25, 1946. Registration was cancelled for failure of the registrants to comply with requisites of the relevant laws, especially the provisions of Articles II and VL of the Regulations for the registration, revision, certification and advertising of patent medicines, toilet, hygienic, beauty and similar products. Items appearing in the cancellation list may not be imported or manufactured in Mexico. Storing or sale of the products is prohibited in the case of toilet goods after one year.

More Toilet Articles **Exempt from Price Control**

As we go to press there is no longer any control over prices. However, President Truman has asked Congress to pass a bill extending price control.

In the event that such control is reestablished we publish here a list of articles which were formerly exempt through a revision of Office of Price Administration S.O.127:

Compacts and vanity cases made of precious metals, lipstick holders made of precious metals, shaving equipment made of precious metals, wood hair curlers, brushes for applying lipstick or cosmetics, eyebrow brushes. deodorizers, soap mitts, reagent chemicals, tale, liquid soap dispensing equipment, beeswax, room deodorants, incense, montan and I.G. waxes, pearl essence, cold wave solutions, cologne, cosmetic stockings. cuticle remover, eye mascara and shadow, eyebrow dyes, eyebrow pencils, eyelash dyes, hairbleaches (except peroxide), hair dye, hair lacquers. liquid wave sets, perfume, permanent wave cream, permanent wave solutions and lotion, powdered wave set and toilet water.

Cosmetic Credit Men Hold Last Summer Party in Great Neck, N. Y.

Informal gaiety marked the annual Summer party of the Drug, Cosmetic and Chemical Credit Men's Association at Great Neck and Plandome. N. Y., June 14. After luncheon at the Plandome Country Club the men played golf while the women, amused themselves playing bridge at the home of Nat Otte in Great Neck. After golf the whole party assembled at the Plandome Country Club for cocktails and a banquet. Joseph C. Lynch, chairman, presided and expressed the gratitude of the group to Mr. Otte for his hospitality at the annual parties over the years. Mr. Otte responded by assuring the group that even though no more parties will be held at the Great Neck home because his family is moving to New York City, the same welcome will be extended to all at the new home. Following the banquet the party assembled at the Great Neck home of Mr. Otte for the last time, where a general good time, for which the group is noteworthy, was enjoyed by all until a late hour. The musicians in the group took turns at the pianos. Games and songs added to the hilarity.

A final meeting of the group was held on the evening of June 20, before the Summer recess. Regular monthly meetings will be resumed in the Autumn. Officers of the group are: J. C. Lynch, chairman; E. F. Maloney, vice chairman; G. Wohlfert, treasurer; Otto Werner, secretary, and Nat Otte, group secretary.



A. D. Shoup, Jr., and Mr. and Mrs. W. J.



Before the banquet Mr. and Mrs. W. E. Foster, Otto Werner, secretary; Joseph C. Lynch, chairman; G. Wohlfert, treasurer; and Nat Otte, background enjoy a discussion by Mrs. Zirkel, Conniff are snapped on their way to the feast. the group secretary hold an officers' assembly. Mrs. Demarest and Miss Mabel Thormahlen.



James B. Demarest and George Zirkel in the





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Cosmetic Dermatology (Goodman)	6.50
Drug & Specialty Formulas (Belanger)	6.00
Surface Active Agents (Young & Coons)	6.00
Flavor (Crocker) Just published!	3.00
Hair Dyes & Hair Dyeing (Redgrove & Foan)	5.00
National Formulary, VII	6.25
Perfumes, Cosmetics & Soaps (Poucher) Vol. I	8.00
Perfumes, Cosmetics & Soaps (Poucher) Vol. 11	8.00
Perfumes, Cosmetics & Soaps (Poucher) Vol. III	7.00
Practical Flavoring Extract Maker (Kessler) water damaged	2.00
Substitutes (Bennett)	4.00
The Law of Foods, Drugs & Cosmetics (Toulmin) One Large volume, 1460 pages	17.50
The Subtle Sense (Ralph Bienfang)	2.00
Henley's Twentieth Century Book of Recipes, Formulas and Processes	4.00
U. S. Dispensatory XXIII	15.00
U. S. Pharmacopoeia, XII	7.75

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T.G.A. Statistical Survey Not Getting Needed Support

The effort of the Toilet Goods Association to compile needed sales statistics to be summarized and made available for the use of the industry has run into difficulties. A questionnaire was sent out to members and nonmembers and while a substantial number of replies were received over 27 per cent were unwilling to furnish information under any circumstances. Of the companies considered "essetial" over 29 per cent refused to furnish information under any circumstances. For the present action has been deferred.

Allied Products Becomes Avon Allied Products

Allied Products, Inc., New York, N. Y., has changed its name to Avon Allied Products, Inc.

Florasynth Laboratories, Inc. Broadens Pacific Coast Service

In line with recent organization activities of Florasynth Laboratories, Inc., New York, N. Y., for broadening the company's already extensive service to its Pacific Coast clients.

William Lakritz recently met in San Francisco with two of his West Coast executives, Walter J. Morehead, who is in charge of the San Francisco territory, and Denneth Withington, supervisor of all West Coast operations with headquarters at San Bernardino and Los Angeles.

NBBMA Holds Annual Picnic

Active and associate members of the National Beauty and Barber Manufacturers' Assn., with their wives and friends, met for the association's annual picnic on July 9, at the Pomonok Country Club, Flushing, Long Island.

Strictly no business proved the order of the day as the picnickers participated in the many special events being featured, highlighted by a golf tournament, with many valuable prizes for the winners. Both luncheon and dinner were served.



Walter J. Morehead, William Lakritz and Denneth Withington take time out from their extensive plans for the West Coast.

ADCAOM Luncheon News

The regular monthly luncheon meeting of the Allied Drug & Cosmetic Assn. of Michigan was held June 12 at the Detroit-Leland Hotel. The speaker was Briant Sando, whose subject was "Shoot the Works," a talk on selling and advertising in today's changing markets.

Golf dates for the Association's Summer meetings are: July 23, Aug. 27 and Sept. 24.

All meetings will be held at the Birmingham Country Club, Birmingham, Mich.



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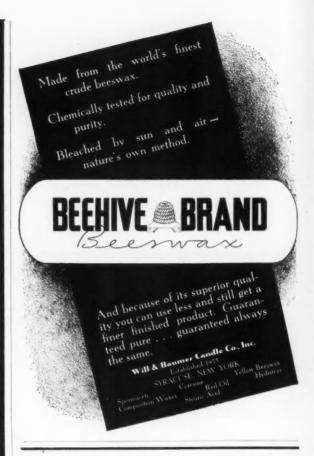
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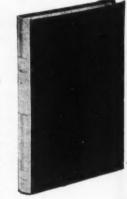
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Here for the first time the scattered ma-Here for the first time the scattered material on every aspect of flavor and odor is gathered together in one volume. The book is a pioner treatment of the whole subject of flavor, including both its theoretical and its practical sides, and represents the most recent advances in this increasingly significant specialized field. Of special importance to precise laboratory analysis and evaluation of flavor quality, the book presents a new and unique odor classification system developed by odor classification system developed by the author and Mr. L. F. Henderson.



CONTENTS

- i. The Elements of Flavor
 2. The Physiology of Flavor Perception
 3. Psychology in Flavor
 4. The Language of Flavor
 5. Natural Sources of Taste
 6. Significant Elements in Popular
 Flavors
- 7. Essential Oils of Flavor Interest
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 Volatility as a Property of Odoriferous Substances

 Influences of Processing on Flavor
 10. Flavor Changes on Storage
 11. Organologite Technique
 12. Consumer-testing of Feeds
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 14. Beverage Aproximal by Technique
 15. Commercial Quality Searing

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Lever Brothers Experiences Sweeping Reorganization

Charles Luckman, newly elected president of Lever Brothers, Co., Cambridge, Mass., has effected a

sweeping reorganization of the top executive personnel of the company.

The officers are: W. R. Veale, vicepresident and general manager; Robert F. Elder, vice-president in charge of consumer research;



Charles Luckman

John R. Gilman, vice-president in charge of advertising; Arthur P. MacIntyre, vice-president in charge of finance; Walter W. McKee, vice-president in charge of sales, and Alexander B. Stewart, vice-president in charge of production. The above classifications represent the departments into which the company's entire operation has been divided.

W. R. Veale, in a newly created

post, will be responsible to Mr. Luckman for the company's entire operation. He is also a member of the board of directors. A native of Greenwich, England, Mr. Veale grew up in Wauwatosa, Wis. He joined the Palmolive Co. (now Colgate-Palmolive-Peet Co.) in 1922 as a clerk in the advertising department. He advanced steadily in the advertising department until 1935, when he became manager of the United States soap department. In 1938 he joined Frankfort Distillers as manager, responsible for general operations.

Robert F. Elder was born in Lynn, Mass., and is a graduate of Harvard University. He was a motion picture engineer, salesman, market researcher, and for eight years a member of the faculty of M.I.T. He joined Lever Brothers in 1937 as director of research. In 1945 he was made assistant to the president.

John R. Gilman is a graduate of Harvard. He entered the company in 1918 and became assistant advertising manager in 1924, and associate advertising manager in 1927.

Arthur P. MacIntyre was born in

Cambridge, Mass., and attended Dartmouth College, then joined the Exchange Trust Co. of Boston. He came to Lever Brothers in 1920 as an accountant, and became comptroller in 1922 and treasurer in 1935.

Walter W. McKee was born in Stuart, Iowa, and attended the State College of Iowa. He became a soap salesman in Denver, Colo., and worked up to sales manager of toilet articles for Colgate-Palmolive-Peet Co., in the Cincinnati district. In 1941, Mr. McKee became sales manager for the company. In 1944, at Mr. Luckman's invitation, he joined the Pepsodent Division of Lever Brothers as vice-president in charge of sales.

Alexander B. Stewart, a native of Scotland, joined Lever Brothers as a sales supervisor in 1924. He later assisted in the installation of modern production systems, construction of a research department, and in developing packaging, new plants, and labor management policies. Since 1933 he has been assistant to the president, with increased responsibility in the field of production.

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Dr. Alexander Katz, founder and president of Dr. Alexander Katz & Co., Los Angeles, Calif., and of Essential Aromatics Corp., New York, N. Y., snapped with D. V. McNinch and Thomas Flanagan, Chicago representatives and Paul G. Fourman of the San Francisco branch. A. E. Illes, Dallas, Texas, who represents the concerns in the Southeast was absent.

BIMS Enjoy First Colf Session of Season

Although hot, the weather was otherwise perfect for the first golf meeting of the BIMS, held June 27, at Baltusrol Golf Club, Short Hills, N. J. Those who did not play golf enjoyed themselves in their own way, playing cards, talking, or savoring the

clear country air.

Winners of prizes were: William H. Gunther, D. J. Bradley, George P. Dunn, William H. Davis, Ross A. White, G. W. Sands, Burton T. Bush, Jr., Alexander D. Henderson, William Edsall Terry, Frank L. Kiernan, Fred W. Webster, Joseph Gartlan, C. Porter, Walter W. Weber, Louis L. Brennesholtz, **Dudley Shaw and Felix** Levy-Hawes.

Also present, nonplayers and non-prize winners were: Alonzo L, van Ameringen, Ivon

Budd, Wallace Bush, Fred Lueders, Irving Bennett, Victor Fourman, Karl Voss, Augustus Bergman, Jack Reiner, Ben Woods, Charles Darr, Martin Schultes, Leonard Schultes, William Zimmerman, and others.

Following dinner those present were lead in songs by Charles Darr. The success of the occasion was largely due to Martin F. Schultes, chairman of BIMS.

Two more tournaments are scheduled for the season. The first will be held Aug. 13, at the Winged Foot Golf Club, Mamaroneck, N. Y., and the second on Sept. 13, at Wheatley Hills Golf Club, East Williston, L. J.

President Attends Stockpiling Meeting Headed by Deupree

A White House meeting, with President Truman attending, was held June 20 by the full membership of the reorganized Army and Navy Munitions Board. The board was headed by Richard R. Deupree, president of Procter & Gamble Co.

The board is responsible for organizing industry to meet into action in case of emergency. Stockpiling legislation which has been passed by Congress is now in conference. A military head is provided by legislation as passed by the House, and the Senate version provides for a civilian head. Representation by both military and civilian agencies is expected to provide for stockpiling long-range supplies of strategic materials.

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C Kay



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Plans have been completed and a site, in Stamford, Conn., has been acquired for the new chemical research laboratory of Air Reduction Co., Inc., and U. S. Industrial Chemicals, Inc. It will accommodate the 200 technical employees constituting the chemical research staffs of the two companies. The laboratory buildings will have a floor space of 100,000 square feet. Of modified colonial design, carried out in brick with white stone trim, the main structure will be three stories high, L-shaped, with a clock tower at the juncture of the two wings.

Perfumers Enjoy First Tri-City Golf Tournament in Chicago

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The Allied Drug & Cosmetic Association of Michigan and the Associaated Drug and Chemical Industries of Missouri joined with the members of the Chicago Perfumery Soap and Extract Association at the first tri-city golf tournament and party at the Olympia fields, Chicago, July 16.

Philippine Island Trade Mark Record Lost

Trade mark records in the Philippines were destroyed as a result of the war. Those who had registered marks in the islands should supply the Bureau of Commerce, Manila, Philippine Islands with a copy of the certificates which were in force before the war.

New Firm **Enters Field**

International Parfumeurs & Oils Corp., New York, N. Y., has been formed with offices at 521 Fifth Ave.

Obituary

Elmer Freed

Elmer Freed, sales manager of Northam Warren Corp., Stamford. Conn., was killed trying to stop a



Elmer Freed

run-away horse during the recent Associated Chain Stores convention at Murray Bay, Canada. Mr. Freed, Northam Warren, Jr., and their wives, were enjoying a ride in a rented horsedrawn carriage when the acci-

dent occurred. The horse bolted and while Mr. Freed was attempting to work his way out to the horse's back, the carriage smashed into a tree. None of the other three occupants were seriously injured. Mr. Freed died without regaining consciousness.

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MARKET REPORT

Aromatic Chemicals Supply Situation Critical

THE supply situation in aromatic chemicals appears to be worse than at any time during the war period. Major producers report many inquiries, but it is virtually impossible to book orders on a long list of items because of shortages. It will undoubtedly require some time for recovery from the effects of the steel and soft coal strikes which cut production of numerous coaltar inter-

AROMATICS SITUATION

Manufacture of a long list of aromatics is dependent upon a sufficient supply of such basic materials as benzol, meta-cresol, phenol, naphthalene and other basic materials. The situation with regard to meta-cresol from which thymol is made remains critical and trade reports indicate that it will require a period of many months before supplies of this material again become normal.

Certain natural oils necessary in the production of aromatics continue high in price and difficult to obtain. Very little lemongrass oil is offered from India and South American material is likewise difficult to obtain. Petitgrain oil has continued to advance in price without any relief in the tight supply position. Ocotea cymbarum along with other commodities from Brazil remains scarce.

If glycerin producers are able to continue operations at the same rate as in the first four months of the year, total production for the year will be close to 167,340,000 pounds of crude material as compared with last years output of 172,451,000 pounds it was disclosed here following the release of official production figures for April. Production reached an all time record level in 1944 totaling 199,835,000 pounds. An encouraging factor in the statistical position in glycerin is the fact that factory and warehouse stocks of both crude and refined material rose from 49,948,000 pounds at the end of March to 50,533,000 pounds at the close of April. During the war period it was generally regarded by the trade that a reserve of 50,000,000 pounds was a reasonably safe level. April production of crude glycerin increased by 224,000 pounds to 14,-266,000 pounds.

ESSENTIAL OILS FROM ITALY

Of interest in the essential oil market was the arrival of the steamer Mesh Knot from Italy with the largest cargo of essential oils aboard since the war. The steamer carried 980 quarter cases and 20 full cases of lemon oil; 24 half cases and 181 quarter cases of bergamot oil; 2 cases and 6 quarter cases of jasmin; 1 quarter case of sweet orange oil; and 12 cases, 19 half cases and a single quarter case of mandarin. Production of California lemon oil is reported running well below the existing demand. Recent release of Italian lemon oil served to bring about some relief in the supply pic-

Spot prices on oil peppermint were promptly adjusted by dealers following the boost in ceilings by the OPA. It is expected in local trade circles that the OPA will recognize the necessity of higher ceilings on other oils of domestic origin including such articles as wormwood and tansy. Export inquiry continued quite brisk for peppermint oil. Government purchases of peppermint up to the end of April have amounted to 42,000 pounds.

Both anise and cassia oils registered further declines, but such a downward movement in selling schedules had been anticipated in keeping with the drop in shipping prices during May. While the reduction brings quotations nearer to a pre-war level. there are increasing signs of strength in the shipping positions. Following further slight adjustments in spot prices a steadier tone should develop.

Among the seed and spice oils, clove displayed an easier tone with quotations registering a moderate decline. Weakness in caraway oil was attributed in some measure to the revival of trade with Holland and the fact that the article happens to be one of the few exportable items available in that country. More favorable prices for the seed resulted in an adjustment in oil cardamon prices.

MENTHOL MARKET PICTURE

The situation in menthol seemed rather confusing over the past month in the face of reports coming out of China and the extremely bullish advices from Brazil. Approximately 100 tons of menthol is reported available in China. Shipping prices from China have been too high in the opinion of local trade factors but the continued upward trend in shipping prices from Brazil will make it easier for China to compete with the Brazilian producers for United States trade. Recent turn of events in Brazil seem to indicate that certain interests there are attempting to corner the market, advising independent producers not to sell their menthol, since China will be unable to offer any sizeable amounts to the United States this year and that with the heavy consuming season approaching, American consumers will soon be forced to come into the market and pay much better prices.

For the first time since the depression period of 1929, the outlook in the alkali market is for higher prices. One major producer has already notified consumers to the effect that prices will be increased 15 per cent on July 1. An advance in these basic chemicals, it is expected, will be reflected in a long list of sodium and

potassium compounds.



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PRICES IN THE NEW YORK MARKET

ignotations on these pages are those made by local dealers, but are subject to revision without notice)

ESSENTIAL OILS	Citronella, Ceylon 2.00 Nom'l	Opopanax
Almond Bit, per lb 3.50@ 4.00	Java type 5.50@ 6.00	Orange, bitter
FFPA 4.75@ 5.10	Cloves, Zanzibar 1.50@ 1.55	Brazilian 1.60@ 1.75
Sweet True 1.25@ 1.50	Coriander 20.00@ 25.00	Calif., exp 1.80@ 2.00
Apricot Kernel	Imitation	Orris Root, abs. (oz.)135.00@
Amber, rectified 2.25 Nom'l	Croton 4.25@ 4.80	Artificial
Angelica Root	Cumin 9.00@ 11.00	Pennyroyal, Amer 3.35@ 3.75
Anise, U. S. P 2.00@ 2.75	Dillseed 7.00 Nom'l	European 3.40@ 3.85
Imitation 1.75@ 2.10	Erigeron	Peppermint, natural 7.15@ 7.40
Aspic (spike) Span 2.85@ 3.25	Eucalyptus 1.09@ 1.15	Redistilled 7.65@ 7.70
Avocado 1.05@ 1.25	Fennel, Sweet 4.00@ 4.50	Petitgrain 4.25@ 4.60
Bgv 1.35@ 1.60	Geranium, Rose, Algerian 17.50@ 19.00	Pimento Berry 7.00@ 7.60
Bergamot 6.25@ 6.75	Bourbon	Pinus Sylvestris 4.25@ 5.00
Artificial	Turkish 7.50@ 8.00	Pumillonis 4.25@ 4.75
Birch, sweet 2.50@ 5.00	Ginger	Rose, Bulgaria (oz.) 36.50@ 45.00
Birchtar, crude 3.50 Nom'l	Guaiac (Wood) 2.90@ 3.10	Synthetic, lb 45.00@ 55.00
Birchtar, rectified 5.00 Nom'l	Hemlock 2.65@ 3.34	Rosemary, Spanish 1.60@ 1.75
Bois de Rose 5.25@ 6.00	Substitute	Sage
Code, U. S. P	Juniper Berry 8.25@ 10.00	Sage, Clary 25.00@ 30.00
Cajeput 3.00 Nom'l	Juniper Wood, imitation 1.00@ 1.25	Sandalwood, N. F 9.52@
Calamus	Laurel 5.00 Nom'l	Sassafras, natural 2.00@ 2.15
Camphor "white" dom	Lavandin 5.00@ 5.75	Ocotea Cymbarum80@ .85
Cananga, native 9.75@ 10.50	Lavender, French	Snake root
Rectified	Lemon, Calif	Spearmint 5.50@
Caraway 7.00@ 7.50	Italian 3.25@	Thyme, red
Cardamon 19.00@ 22.00	Lemongrass 3.40@ 3.75	White
Cassia, rectified, U. S. P 5.00@ 5.30	Limes, distilled 6.00@ 7.00	Valarian 40.00 Nom'l
Imitation 3.75@	Expressed	Vetivert Java 50.00 Nom'l
Cedar leaf 1.10@ 1.25	Lingle 5.35@ 5.75	Rourbon 35.00@ 40.00
U. S. P. 2.50@ 3.10	Lovage	Wintergreen 4.00@ 8.25
Cedar wood 1.00@ 1.25	Marjoram	Wormseed 5.00@ 5.35
Celery	Neroli, Bigarde P300.00@375.00	Ylang Ylang, Manila 38.00 Nom'l
Chamomile	Petale, extra 265.00@300.00	Bourbon
Cinnamon bark oil	Olibanum 4.75@ 5.10	(Continued on page 103)
2000	7.73(0 3.10	(Continued on page 103)

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(Continued from page	1011	Benzyl Alcohol	.75@ 1.00	Indol, C. P.	20.00@ 23.00
(commerce many page	,	Benzyl Benzoate		Iso-borneol	
TERPENELESS OILS	5	Benzyl Butyrate		Iso-butyl Acetate	
	1 500 20 00	Benzyl Cinnamate		Iso-butyl Benzoate	
Bergamot			2.50@ 3.75	Iso-butyl Salicylate	
Grapefruit		Benzyl Formate		Iso-eugenol	
	8.00 Nom'l	Benzyl-Iso-eugenol	9.50 Nom'l		
Lemon		Benzylidenacetone	2.10@ 3.05	Iso-safrol	
Lime, ex 8		Borneol	1.80 Nom'l	Linalaol	7.50@ 8.00
Distilled 6		Bornyl Acetate	2.25 Nom'l	Linalyl Acetate 90%	
Orange sweet 8		Bromstyrol		Linalyl Anthranilate	
Peppermint		Butyl Acetate		Linalyl Benzoate	
Petitgrain	3.85@ 4.25	Cinnamic Alcohol		Linalyl Formate	
Spearmint	5.00@ 6.00	Cinnamic Aldehyde	.95@ 1.10	Menthol, Brazilian	7.75 Nom'l
		Cinnamyl Acetate	8.75@ 10.00	Methyl Acetophenone	1.80 Nom'l
DERIVATIVES AND CHEM	MICALS	Cinnamyl Butyrate	12.00@ 14.00	Methyl Anthranilate	2.25@ 2.40
Acetaldehyde 50%	1.90@ 2.75	Cinnamyl Formate	10.00@ 13.00	Methyl Cellulose, f.o.b., ship-	
	1.65@ 1.80	Citral, C. P.	6.75@ 7.00	ping point	.60 Nom'l
	4.25@	Citronellol	6.50 Nom'l	Methyl Cinnamate	3.25@ 3.80
C 9	4.00 Nom'l	Citronellyl Acetate	8.60@ 9.20	Methyl Eugenol	3.50@ 6.75
	4.25@	Coumarin	3.00@ 3.50	Methyl Heptenone	3.50 Nom'l
•	1.50 Nom'l	Cuminic Aldehyde	8.00@ 11.25	Methyl Heptine Carbonate	45.00@ 60.00
C 12	range committee	Diethylphthalate	.24@ .30	Methyl Iso-eugenol	5.85@ 10.00
Aldehyde C 8		Dimethyl Anthronilate	4.55@ 5.00	Methyl Octine Carbonate	24.00@ 30.00
C 9		Ethyl Acetate	.25@ .35	Methyl Paracresol	
C 10 I		Ethyl Anthranilate	5.50@ 7.00	Methyl Phenylacetate	
	2.00 Nom'l	Etyhl Benzoate	.75@ 1.00	Methyl Salicylate	.37@ .38
	3.50@ 28.00	Ethyl Butyrate	.75@ .90	Musk Ambrette	4.25 Nom'!
	7.50@ 9.00	Ethyl Cinnamate	3.60@ 3.80	Ketone	4.35 Nom'l
	7.65@ 8.25	Ethyl Formate	.65@ .80	Xylene	2.00 Nom'l
Amyl Acetate	.55@ .75	Ethyl Propionate	.80 Nom'l	Neroline (ethyl ether)	
Amyl Butyrate	.90@ 1.10	Ethyl Salicylate	.90@ 1.00		
	4.50@ 5.80	Ethyl Vanillin	5.25@ 6.00	Paracresol Acetate	2.55@ 3.00
	2.35@ 2.80	Eucalyptol		Paracresol Methyl Ether	
	1.00@ 1.50	Eugenol	2.85@ 3.35	Paracresol Fhenyl-acetate	
	3.65@ 4.00	Geraniol, dom.	6.25 Nom'l	Phenylacetaldehyde 50%	3.00 Nom'l
			3.60 Nom'l	100%	5.00 Nom'l
	.80@ 1.00	Geranyl Acetate		Phenylacetic Acid	2.10@ 3.00
	2.10@ 2.75	Geranyl Butyrate	****	Phenylethyl Acetate	3.00 Nom'l
	2.65@ 3.25	Geranyl Formate		Phenylethyl Alcohol	
	3.10@ 3.75	Heliotropin, dom.	3.75@ 4.00	Phenylethyl Anthranilate	
	1.15@ 1.30	Hydrotropic Aldehyde		The state of the s	
Benzyl Acetate	.55@ .65	Hydroxycitronellal	8.50 Nom'l	(Continued on page	105)

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(Continued from page	103)
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Phenyl Valerianate	16.00@ 17.50
Phenylpropyl Acetate	10.00 Nom'l
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Scatol C. P. (oz.)	5.35@ 6.00
Styrolyl Acetate	2.50@ 3.00
	2.60 Nom'l
Vanillin (clove oil)	
(guaiacol)	2.35 Nom'l
Lignin	2.35 Nom'l
Vetivert Acetate	25.00 Nom'l
Violet Ketone Alpha	18.00 Nom'l
Beta	15.00 Nom'l
Methyl	6.50 Nom'l
Yara Yara (methyl ester)	2.00@ 3.10
BEANS	
Tonka Beans Surinam	.85@ .95
Angostura	1.60@ 1.85
Vanilla Beans	
Mexican, whole	11.00@
Mexican, cut	10.00@
Bourbon	7.75@ 8.50
Tahati	3.35@ 3.75
1011011	3.33@ 3.73
SUNDRIES AND DR	UGS
Acetone	.07@ .071/2
Almond meal	.25@ .35
Ambergris, ounce	12.00@ 16.00
Balsam, Copaiba	1.80@ 2.00
Peru	1.20@ 1.30
Beeswax bleached, pure	
U. S. P	.68@ .70
Yellow, refined	.60@ .62
Bismuth, subnitrate	1.20@ 1.22
Borax, crystals, carlot ton	55.50@ 58.00
Boric Acid, U. S. P., cwt	6.95@ 7.55
BOTTE ACIO, U. J. F., CWT	0.73(0 7.35

Calcium, phosphate	.08@	.083/4
Phosphate, tri-basic	.09@	
Camphor, domestic	.69@	.84
Castoreum, Canada	7.80@	10.00
	1.75@	1.80
Cetyl, Alcohol	.031/2@	.061/2
Cherry Laurel Water, jug. gal.	2.60@	3.10
Citric Acid	.21@	.24
Civet, ounce	18.00@	25.00
Clay, colloidal	.07@	.15
Cocoa, Butter, lump	.251/2@	
Cyclohexanol (Hexalin)	.30@	
Fuller's Earth, ton	15.00@	
Glycerin, C. P.	.181/4@	
Gum Arabic, white		.32
Amber	.143/4@	
Powdered, U.S.P.	.17@	
Gum Benzoin, Siam	5.00	Nom'l
Sumatra	1.40	Nom'l
Gum Galbanum		1.35
Gum Myrrh	.50@	
Henna, pwd	.28@	
Kaolin	.05@	
Labdanum	5.00@	
Lanolin, hydrous	.30@	
Anhydrous	.31@	
Magnesium, carbonate	.09@	
Stearate	.24@ 45.00@	
Musk, ounce Olibanum, tears	.21@	
Siftings	.121/2@	
Orange Flower Water, gal	1.75@	
Orris Root, Italian		
Paraffin		
Peroxide	1.10@	
Petrolatum, white	.061/4@	
Quince Seed	1.50@	
Rice Starch	.10	Nom'l
Rose Leaves, red	3.45@	
Rose Water, gal.	6.50@	
Barr to verice		

Rosin, M. per cwt	7.49@	
Salicylic Acid	.35@	.40
Saponin	1.75@	2.10
Silicate, 40°, drums, works,		
100 pounds	.80@	1.20
Soap, neutral, white	.20@	.25
Sodium Carb.		
58% light, 100 pounds	1.53@	2.35
Hydroxide, 76% solid, 100		
pounds	2.60@	3.75
Spermaceti	.26@	.27
Stearate Zinc	.29@	.30
Styrax	1.10@	
Tartaric Acid	.621/2@	
Tragacanth, No. 1	5.00@	
Triethanolamine	.191/2@	
Violet Flowers	2.00	
Zinc Oxide, U. S. P. bbls	.401/2	
OILS AND FAT		101111
Castor No. 1, tanks	.13@	
Cocoanut, Manila Grade,	.1300	
c.i.f., tanks	.0835@	
Corn, crude, Midwest, mill,	.vo33(w	
	.123/4@	
Corn Oil, distilled, drums	.161/4@	141/-
Cotton, crude, Southeast,	.10/4@	.10/2
	.123/4@	
tanks	.08%@	
Lard Oil, common, No. 1	324/2@	
	140	
bbls.	.14@	
Palm Niger, drums		
Peanut, blchd., tanks		. 417
Red Oil, distilled, drums	.131/4@	.14/4
Stearic Acid		
Triple Pressed		
Double Pressed		.16/8
Tallow, acidless, barrels		
Tallow, N. Y. C., extra		
Whale oil, refined	.1232	Nom'l

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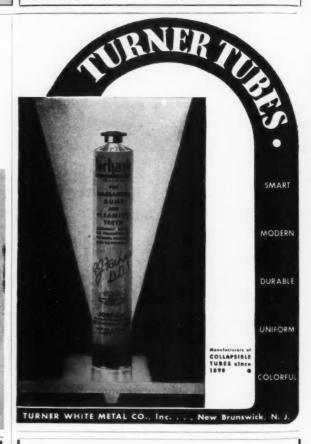
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Marketing Drugs and Cosmetics

by LOUIS BADER, Ph.D.

Associate Professor of Marketing, New York University

and

SIDNEY PICKER, M.C.S.

National Merchandisers

This is the fifth installment. The sixth will appear in the August issue.

CO-OPERATIVE CHAINS: A new type of drug store chain has gained quite some headway and that is the so-called "voluntary" chain. This is patterned after a form of merchandising found in the grocery industry. One of these groups is called the Independent Druggists' Alliance. The object of this group is to get independent unit stores to buy cooperatively, and merchandise in the same way. Their influence has not yet been felt to any great extent because they are still few in number and their expansion was hindered by the war, but they may become an important factor as they have in the grocery field, where in five years they grew from 59,640 to 103,334 stores. They will be discussed further in the chapter on Co-operative Plans.

OTHER TYPES OF RETAIL OUTLETS FOR DRUG AND COSMETIC PRODUCTS: In addition to the drug store, chain and independent, there are other outlets handling drug products whose influence on trade volume is important. These are discussed in the following order; general merchandise chains, grocery stores and supermarkets, mail-order houses, department stores, beauty parlors and barber shops, general stores, institutional outlets, company stores, Army and Navy Outlets, and house-to-house selling. Each of these calls for a special form of approach and merchandising effort.

A study of these outlets appears in Drug Trade News for 1939. There is no known comparable later study.

Studies of single phases of the market suggest that drug stores and department stores still lead in the sales of toiletries 11 but the surveys of *Progressive Grocer* and *Supermarket Merchandising* for 1944 suggest that grocery stores are increasing and will continue to increase their share of the market. The table below prepared by *Drug Trade News* not only illustrates how important the variety chain has become but it also shows the importance of other types of outlets in the marketing of toiletries.

The table does not tell the whole story. Different types of products have a greater or lower sale in the 10¢ store. For instance, Modern Magazines' survey shows that 82.5 per cent of hair curlers, 21.5 per cent of sanitary napkins, and 55.9 per cent of nail polishes are sold in the dime stores. Note also the advent of the new outlet, the supermarket and the grocery stores. Their importance is growing. The increase in sales in the mail-order houses was probably taken from the country general stores because of greater space in catalogs and special values. Note the sharp drop in drug store sales and the increase in variety store sales. This increase is still continuing at a sharp rate.

GENERAL MERCHANDISE CHAIN: Since 1920, the general merchandise chains have come to the forefront as outlets for drug store types of products, particularly cosmetics and sundries like toothbrushes, mouthwashes,

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Outlets	1939 Sales	1929 Sales
Drug stores	\$183,300,000	\$220,740,250
Department stores	128,960,000	76,503,769
Variety stores	88.690.000	42.266,974
Medicine & cosmetic shops	23,000,000	27,954,138
Country general stores	11,000,000	20,957,313
Dry goods stores	4,000,000	7,136,794
Ready-to-wear stores	5.000,000	5.022.572
Beauty shops	4,500,000	3,909,076
General merchandise stores	1,500,000	2,288,688
Jewelry stores	1.000,000	1,944,483
Family clothing stores	1.000.000	1,681,301
Mail-order houses	8.000.000	1.604.858
Cigar stores	1,250,000	975.706
Super & gracery stores	10,000,000	775,700
	\$471,200,000	\$412,985,922

Plus or Minus for 1939 over 1929	1939 Ratio to US Total	1929 Ratio to US Total
- 16.8 per cent	38.9 per cent	53.5 per cent
+ 68.5 per cent	27.4 per cent	18.5 per cent
+110.0 per cent	18.8 per cent	10.2 per cent
- 17.5 per cent	4.9 per cent	6.8 per cent
- 47.3 per cent	2.3 per cent	5.1 per cent
- 43.7 per cent	0.8 per cent	1.7 per cenf
- 0.4 per cent	1.1 per cent	1.2 per cent
+ 13.3 per cent	1.0 per cent	0.9 per cent
- 32.0 per cent	0.3 per cent	0.6 per cent
- 47.4 per cent	0.2 per cent	0.5 per cent
- 37.5 per cent		
+400.0 per cent	1.7 per cent	0.4 per cent
+ 30.4 per cent	0.3 per cent	0.2 per cent
, and par many	2.1 per cent	
	100 per cent	100 per cent

combs, etc. These chains rank next in importance to drug stores.

The most important independent group of general merchandise chains is the 5¢-and-10¢ to \$1.00 syndicates. They vary from the F. W. Woolworth Co., with over 2000 outlets, to hundreds of smaller chains comprising from 3 to 50 units. 1945 figures show that the 5¢-and-10¢ group comprised about 17,000 stores of which 5200 were owned by the so-called "Big National" and about 12,000 in the smaller chains of independents. Their toilet goods volume by 1945 had reached an estimated total of \$200,000,000 or 30 per cent of the total retail toilet goods volume. In 1929 their sales had amounted only to \$42,266,974.

In attempting to interest the national chain outiets in this merchandise field, it is necessary to use a method of approach different from that used in the drug store chain, because of the difference in purchasing organization. In the merchandise chains, the departments are divided more sharply than in the drug group. The buyer for a specific department generally has considerably more power than the drug buyer or the sales manager of the drug chain. He, of course, interviews sales people who approach him. and generally he makes his selections independently of other executives, although in some cases the power of the buyer is restricted somewhat by a merchandising committee, consisting either of the store managers and the superintendents, or the superintendents and the general merchandise manager. The 5¢-and-10¢ store buyer, having selected a product, and having had it passed by whatever merchandising committees are operating, proceeds to issue a listing on the product. This usually is a notice to each of the individual stores in the chain, advising the store manager that he is permitted to purchase the particular product. The chain store managers then have the option of buying the product or not, as they see fit.

Frequently, however, when in the eyes of the buyer a product appears to have exceptional sales possibilities, the buyer himself, or the district managers or supervisors, may issue what is known as assignment orders, with shipping instructions, for merchandise to be sent to key stores for test purposes.

The variety chain store is operated on the specific turnover basis. Each product that is placed on the counter must pay its own way. Careful records are kept of the ratio of turnover of all products, and any particular product that does not yield profitable sales gradually diminishes in favor and is finally eliminated from sale in the store. It is obvious, therefore, that in the chain stores of this group, package appeal is important and when placed on open display in the store, the opportunity is presented of demonstrating its sales value and the advertising pull it possesses. If successful in these respects its sale is continued by the store.

The most popular drug product range in the variety stores is 10ϕ to 25ϕ and it is believed that 90 per cent of the sales are in this price range. The variety chain gives effective distribution with less sales costs in the traffic centers of most cities. The stores are usually well located, have large consumer traffic, and give the manufacturer the opportunity of obtaining the fullest value from his advertising. The chain manager can and does give real cooperation to the manufacturer of products in which he is interested. He will tie in displays with the merchandis-

ing of the product and this aids materially in making sales. Chain stores have permitted manufacturer's demonstrators, in an effort to attract customers, and the outlets have, consequently, become more important in the manufacturer's efforts to break¹² into the market. There are many successful products like Cutex, Flameglo, Irresistible, Dura-Gloss, whose sales are largely in the variety chain stores.

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GROCERY STORES AND SUPERMARKETS: A survey by Drug Trade News showed that grocery stores and supermarkets were in fourth place as distributors of drugs, medicines, and toiletries. In a survey, by the Progressive Grocers in 1944, 43 per cent of the better grocery stores, as against 37 per cent in 1935, were found to carry drug sundries. In at least one case these drug store products accounted for 15 per cent of a grocery chain's total business. Another survey, by Super Market Merchandising, 4 found that nearly 1400 stores, mostly supermarkets, were planning new drugs and toiletries departments, and the last two surveys indicated that many more grocery outlets were planning or considering them for after the war.

These stores apparently are specializing only in quick-moving items and they are inclined to favor well-known brands. It would seem that manufacturers of dentifrices, shaving creams, hair dressings, shampoos, lotions, and creams, and, where state laws do not prohibit, manufacturers of headache and digestive remedies, vitamin pills, nose drops and inhalants, and chest and alcohol rubs can no longer ignore these outlets. Considering the large number of grocery stores and their aggressive merchandising policies it might be wise for manufacturers to make up special lines for them as was done when it was discovered that variety stores could handle large volumes of some products.

The approach to the independent grocers should be much the same as to the independent druggists except that more educational work will be necessary. To the former these are new goods and much advice will be needed. With chains, supermarkets or otherwise, a chain store approval will be necessary. There is, however, one thing in the seller's favor—this is still experimental ground. The seller who gets there first with good products and favorable prices will be in on the ground floor. His products will be "in." Because of the tendency in these stores to offer a selected line he may be in favor for a long time.

MAIL-ORDER HOUSES: Since 1920, the number of mailorder houses has diminished materially. For all practical purposes they have been reduced to the two largest, Sears, Roebuck and Co. and Montgomery Ward and Co. There are several smaller houses, whose toilet goods business, however, is not of large volume, nor are they important.

A study of the catalogs of the two main mail-order firms shows that the toilet goods and the drug sections contain many nationally advertised products, the balance being private brand merchandise, on which the profit margin is usually greater. The catalogs, through which many of the sales are made, are prepared several months in advance of issue. Therefore, in order to obtain listing in them, the prospective buyers of the mail-order houses must be solicited in time to make the issue of the catalog. The catalog house buyers insist upon being paid for space in the catalogs, especially in the drug and toilet goods section. Because of the limitation of space and the number of lines

competing for it, special concessions from the manufacturer are usually expected by the mail-order houses. Payment must be either cash or a percentage of the sales for the space given. However, this is not a sine qua non, since buyers will not list in the catalog every item offered by a firm. The catalog's success is dependent upon sales and each page of the book is expected to produce its proportionate returns in sales; consequently great selectivity is practiced by those who decide what is to appear in the stalog.

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The potential sales volume from the catalog is high, as is evidenced by the extensive drug and toiletry lines in the books, and the large amount of space devoted to products of this type, although the amount of space given to each item is frequently little more than a few lines. These catalogs give any manufacturer excellent rural coverage in large areas that are ordinarily difficult for manufacturers' salesmen to reach, and help close up distribution gaps for national advertisers. Sales value may become much greater if an experiment now being tried out is successful. The mail-order house of Spiegel, Inc. has experimentally established mail-order desks in a few gasoline service stations. The managers of the stations, it is hoped, will show the catalogs and take orders, which will then be filled by the mail-order house. 15

It is practically impossible to get into the catalogs unless one is prepared to offer unusual values, or else create a sufficient consumer demand for the product so that the mail-order buyer will want to list the merchandise. Both Sears, Roebuck and Montgomery Ward also own a chain of department stores. Originally these stores stocked only the merchandise listed in the catalogs. However, now the branch stores carry lines appropriate to the territory they serve, and should be solicited just as any local chain is.

DEPARTMENT STORES: The department stores each for a time represented an independent outlet, few in number in each community, but very important in their control of sales and their effect on other stores' policies. For a long time department or section buyers were the important factors in purchasing for individual stores but as a result of the era of consolidation and combination among department stores the power of the buyer has been reduced so that the merchandising manager has become the one who determines the nature of the products that the department store is to carry. The department stores do not, in a large way, go in for what is commonly known as "quick sale" or popular demand merchandise in toilet goods departments, except where there are basement departments. In cosmetics they especially favor lines pushed by hidden or open demonstrators, who are paid for by the producer of the goods.16 Their desire appears to be to handle nationally known branded lines, agency lines, high-pressed specialties, exclusive packages, and lines that are advertised by demonstration appeal to department store customers. Few department stores will promote any specialty that sells for less than \$1.00. For this reason it is very difficult to get on the already overcrowded counters of the department store with new lines and quick sales products unless unusual, special inducements are made. These inducements usually take the form of extra discounts, liberal advertising over the store name, premiums for clerks, payment of clerks' salaries, and hidden demonstrators. If a demand is created for a product, the department store buyer will stock it, unless of course, the center of the sales efforts in that section is a special store selected for a sales drive. The manufacturer must determine for himself to what degree he wants to make these inducements in exchange for the cooperation he can get from the stores selected.

Department stores rarely will start a new promotion item without large advertising allowances. Since 1930, advertising allowance demands from the larger department stores have been increasing, especially in the large cities. Most of these advertising allowances originated in connection with the sale of toiletries and at first were only large enough to cover the cost of demonstrators. Today, it is very difficult to introduce any line or specialty through a department store without cooperative advertising, demonstration, or both. Generally, consignment or guaranteed sales are demanded. Most large stores are staffed largely with hidden and open demonstrators. Because of the above, department store outlets require special handling. Department stores are not particularly important outlets for drug products until a product has become established or gained sales momentum. There are no hard and fast rules that can be all inclusive. Some firms that are department-store minded, like the cosmetic house of Shulton, have become definitively successful with these, using them as their principal selling outlets. Others find drug chains and retailers and, still others, the variety store as giving the line of least resistance. The only sure answer is the trialand-error method. The choice depends entirely on the retail price of the article, the advertising margin possible, the number of similar items in the store, and the ability of the sales promotion department of the manufacturer to interest store buyers. A new type of product, like the new vogue in home permanent waving, tells both sides of the story. Crowning Glory-retailing at \$2.00-and Naturalistic-retailing at \$1.50-are making their main efforts through department stores with cooperative advertising as the backbone of their campaign, while products for the same purpose like Beauty Time, Chic and Charm Curlretailing at from 74¢ to 98¢—are putting their sales efforts with drug chains and variety outlets. Department store buyers never like to trade down, so if they are selling a \$1.50 or \$2.00 kit, they definitely will not be interested in the lower-priced unit. These outlets are important, and if you have a product that will interest them, and you can afford the initial cost, you certainly must include them in your plans. In approaching department stores, you must also consider the resident buying offices in New York City, through which many department stores all over the country can be reached.

BEAUTY PARLOR AND BARBER SHOPS: There have been many attempts to teach merchandising to the owners of barber and beauty shops. These stores are a national outlet for toiletry services but have not been successful in their ability to merchandise toiletry products to their patrons. It would seem from the nature of their business that they should be the first place where men and women would prefer to buy toilet goods. But this does not happen, and its failure to happen appears to be due to the fact that most proprietors of beauty and barber shops are either trained or only interested in giving personal service, and are inexperienced in selling merchandise; therefore

they are not inclined to spend away from actual personal service the time necessary to sell merchandise. Furthermore, their financial ability does not permit them to carry anything but a modest assortment of a small stock of restricted lines. The tendency is for people to go to the stores carrying full lines to make their purchases. The brands that are usually sold through beauty shops are more or less confined to that field, private brands and bulk goods, and not widely known among customers.17 This field, therefore, is limited for the general manufacturer. although the consumption of toiletry products for use in the beauty shops is considerable. Beauty shops are rarely sold direct by manufacturers. They are served by wholesalers who handle both equipment and cosmetics. These merchants are interested only in lines yielding large profits and frequently offer their own private brands.

The 1939 Census of Business reported 117,998 barber shops, which did a business of \$230,983,000; 4,199 barber and beauty shops, which did a business of \$18,618,000; and 83,071 beauty shops, which reported a business of \$231,670,000-a total of \$481,271,000. The expenditures were mostly for labor and rent. Nevertheless they account for some millions of dollars' worth of business in shaving soaps and creams, face creams, powder, after-shave lotions, hair dressings, and manicure supplies. It would seem that some enterprising manufacturer or wholesaler could develop a considerable sale-to-consumer business through these stores by making up a point-of-sale receptacle to hold a line of either men's or women's toiletries including, in addition to the products just enumerated, a deodorant and a cologne water. In addition some instruction in the sale of such products to the consumer for use in between visits to the store for service, could be given to the owner or operator.

The manufacturer who wishes to cater to this trade must develop special lines that show large profits. His point of contact is the wholesaler who specializes in the beauty and barber shop trade, but who will handle only merchandise that gives him large discounts, yet might work in the above idea and thus increase his sales materially.

GENERAL STORES: The general store is an important minor outlet for drugs and toiletries. The 1939 Census of Business¹⁸ showed 53,307 general stores, located for the most part in rural sections of the country, which accounted for sales of \$1,294,264,000. These stores are not easily accessible and most advertising, except radio, does not reach their customers, yet they have a large demand for the generally accepted types of drug and toilet goods products.

The problem of reaching this group is one that requires special study. It would be difficult for most sales organizations to reach them. Contracts with these merchants should be left to the wholesaler, and special deals, such as intensive sales drives, special commissions for salesmen, envelope inclosures for mailing, and cooperative drives with wholesalers' salesmen, will help to push sales. In the lower-price ranges we also find that the dry goods wholesalers, through their cosmetic departments, reach many of these merchants.

It has been stated by the N.W.D.A. that nearly one third of the package goods sales of drug and toiletries does not move through the regularly accepted wholesale drug or direct retail selling, and it is believed that most of this volume reaches the consumers through the general store.

INSTITUTIONAL OUTLETS: Drug products are also sold to hospitals and clinics, various government departments and institutions, such as Army, Navy, police, prisons, boards of education, and homes, also to colleges and universities, steamship lines, and large industrial concerns, The approach to these organizations is quite different from sales to retailers. Many of these outlets buy through bids open to any reputable and competent businessman. In other cases the approach is similar to that for doctors. and in still others the same as for the wholesalers. For some of the smaller governmental units the approach may be unique, involving some questionable practices. In one case we had experience with a local druggist who got all the business of the board of education and police departments and was also the agent of a producer whose product was purchased in amounts of \$1000 and more. No one else could supply that product and no other producer's product apparently would do. The druggist was very friendly with the ruling politicians and seemed to find the business very profitable.

The individual outlets in this field may sometimes appear to be small, but the business as a whole is large enough to warrant, in the cases of full-line houses, the establishment of a department to handle the business. It is not proposed here that you go directly after each possible order, but rather to study the necessary approach in cases worth going after and then to take the steps to secure the business; the approach may be through whole-salers, retailers, or it may be a direct approach as in the case of bids.

You may secure, as a preliminary step, mail lists of hospitals, correctional institutions, and homes for orphans and aged people, police departments, boards of education, and the purchasing agents of federal, state and municipal governments. Through judicious inquiry, by mail or otherwise, you can easily find out when, where, and how purchases are made.

Further evidence of the importance of these outlets for drug store products may be seen from the estimates of the National Resources Committee that there are over 2,000,000 people in the institutional field and that expenditures of over \$700,000,000 result from the consumption of these people. 19 The authors are allowing in these estimates for some increase since 1935. 20

COMPANY STORES: The stores maintained by the large mining, lumber, and other manufacturing companies for their employees provide a not unimportant outlet for toilet and drug products as a group. However, the price range of purchases by individual patrons is not very high. Their customers, as a general rule, are out of reach of the average form of advertising employed by most firms. They are either in the extremely low-income group, inclined to buy goods on a price rather than a quality basis, or else they are foreigners whose taste for American merchandise has not been fully developed. Therefore, if any products are to be sold to the company stores, the sale must be made largely on the basis of price. Stores of this group can be reached at the general headquarters of the company owning them, but their consumption per unit being unimportant, they do not warrant too much sales effort or expense on the part of the manufacturer in attempting to reach them; they usually are adequately taken care of by wholeARMY AND NAVY OUTLETS: Somewhat similar to the company stores are the Army canteen or post exchange and stores on naval vessels. We are likely to have both a larger Army and Navy than before 1941 so that these outlets will continue to supply the wants of several million men who because of their age and because of regulations will consume large quantities of certain toiletries. And through the medical branches of the service much drugs and medicines will be consumed. They should receive careful study as outlets for particular products.

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HOUSE TO HOUSE SELLING: House-to-house canvassing is responsible for only a small fraction of retail sales. House-to-house selling is a form of merchandising that any drug-store product manufacturer, particularly of toiletries, can attempt. However, he will come directly in conflict with his retail outlets; so that any manufacturer who contemplates creating dealer good will and cooperation should avoid attempting to develop sales in this manner. Most merchants in all communities object very strenuously to house-to-house soliciting, and do everything in their power to discourage the practice, even going so far as to attempt to get local governments to pass ordinances taxing such solicitors out of business. In a survey made by students of New York University, under the direction of one of the authors, among some New York suburban communities it was discovered that 95 per cent of the housewives interviewed preferred to buy from local merchants and were becoming increasingly hostile to house-tohouse selling.21

INFLUENCE OF THE TYPE OF PRODUCT ON SELECTION: In making the selection of outlets for concentration, it is necessary to consider carefully the buying habits of the public. Usually, most drug store products are products that are not shopped for, because they are low-priced, convenience items, or they are products on which advice of the pharmacist is asked. The public is apt to make purchases in their neighborhood local store of those products that do not involve a considerable sum of money and are usually consumed rapidly and replaced freely. These are usually the emergency purchases, which must be quickly replenished as supplies are consumed.

Other types of products, especially expensive beauty products and perfumes, are sold largely in department stores, frequently by manufacturers' demonstration agents.22 Those firms that concentrate on the department store for distribution usually find that it is most advantageous and desirable to work with the class of stores that specialize in fashion goods and whose price level is above the average. The medium and lower-priced stores were frequently price cutters before the fair trade laws were passed and therefore were of little interest to the newcomer in the manufacture of cosmetics. Since the U.S. Attorney General's office seems to be determined to cause the elimination of the fair trade laws, such stores may continue to be regarded as of little interest to the new manufacturer.23

The United States Censuses of Retail Distribution show that about 63 per cent of the retail drug sales is done in about 32 per cent of the drug store outlets. Too great a proportion of the costs of getting business is caused by trying to reach the last 20 per cent of the dealers. The manufacturer, therefore, should be very careful to ana-

lyze the general purchasing habits applying to his particular product and select the means of reaching the greatest number of potential purchasers, through the most easily accessible and reliable dealer outlets. Dealers who cut prices may not be desirable. The data of the drug store survey in St. Louis, undertaken by the United States Department of Commerce, disclosed the fact that the effect of price cutting on sales was that very few additional products, other than those that were cut, were sold because of the price cutting.

In analyzing his potential market, a manufacturer should discover what outlets generally are dominant in the sale of the product he proposes to make. The manufacturer of cold and cough medicines will more often find his market in the neighborhood store than in the chain store. High-priced toiletries such as Harriet Hubbard Ayer, Elizabeth Arden, and the Rubinstein line are sold usually through department, chain stores, and so-called Gold Coast drug stores. Sundries, low-priced toilet preparations, proprietaries, and ethical products are sold for the most part through the thousands of neighborhood drug stores, where the bulk of prescriptions are filled and the advice of the druggist is sought for purposes of self-medication. The manufacturer must, therefore, arrange his selling and merchandising plans so that they will reach and appeal to those dealers who get the business of the consumer who buys his type of products.

A careful survey such as those made by Modern Magazines will disclose where the public does most of its buying of various types of cosmetic and toiletry products. For instance, soap-which is a toilet article-is sold heavily in grocery stores. Drug stores run as high as 90 per cent in some products and as low as 20 per cent in others. The types of outlet where the public does most of its buying will govern the sales policy and plan. Proper research will indicate potential consumption, the rate of turnover, and the best outlets. Consideration of the above, along with necessary data about the number, the age, the sex, the income, and other characteristics of the people in a trading area (as suggested in Chapter 1), should give the manufacturer an adequate idea of the extent of his dealer market and should enable him to judge how to reach this group most effectively and inexpensively.

BROADENING OF OUTLETS: The drug field presents the same problem with regard to outlets as do other fields, that is, the danger of having a product confined to too few outlets. Whereas in many places it may be found that to operate through the chain store is sufficient, in the long run such a practice might be costly. The market then is controlled by the chain and if the chain decided to get behind another product the market is weakened, or impossible conditions might be laid down for the continuance of orders. Sometimes protection is offered by the fact that after a preparation has become popular in any community even through chain store sales only, there will be a tendency to diversion of business from the chain store to the independent retailer, and, thereby, the expansion of outlets to a broader, safer base. Many wise retailers keep close watch on the merchandise methods of chains and attempt to secure the products that have a successful sale in the chain stores.

Manufacturers are faced with the temptation of seeking new outlets such as grocery stores and variety chains for

their goods to make up for loss of volume in sales. Just how far this tendency will go in the industry is still undetermined. For the present, however, most manufacturers are finding that a large part of their business is obtained at a sales cost that is prohibitive, and they find that the elimination of some of their unprofitable outlets and the consequent saving of the time of men who would otherwise call on them reduces expenses materially and makes it possible to show a profit even on a reduced volume24 that failing to call on certain outlets, may develop. As they reduce their accounts by eliminating small-ordering drug stores some may add grocery and chain store accounts. Grocery stores, chain stores and supermarkets especially are looking for some packaged drug products. If drug stores continue as general stores by adding grocery store items a battle royal is in the making. Grocery stores are 1000 per cent more numerous and as a pressure group out for legislation favoring themselves, they may prove more effective than drug store associations ever were. Manufacturers of drug and cosmetic products must watch this situation carefully. Present conditions of high road expenses, scarcity of trained men and high salary costs. have cut down the economic desirability of direct contacts with many retailers. This has increased the importance of the wholesaler for the manufacturer who has enough merchandise to sell, and wants to make a sharp drive for orders. Changes in buying trends, from one group of outlets to others, means changes in sales policies and sometimes complete revamping of organizations. A sales organization keyed to sell to high-class department stores and chain drug stores will know very little of the independent variety chains and the independent 5¢-and-10¢ stores, who buy their merchandise including toilet goods from regu larly known dry goods wholesalers and who sell millions of dollars' worth of toiletries to the public in these outlets. Some of the largest include those like: Butler Bros., Chicago and 5 other cities; Sprouse Reitz Co., Los Angeles, Calif., and Portland, Oregon; Elv and Walker Dry Goods Co., St. Louis, Missouri; and Consolidated Merchandise Wholesale Corp.

There are over 300 dry goods wholesalers handling miscellaneous lines who also sell toilet goods in 10¢ and 25¢ sizes. Many of them publish extensive catalogs twice yearly and all of them include the leading advertised brands of package remedies and toiletries in their listings. The drug sections also include most of the common household packages. These houses usually have large sales staffs, some as high as 50 to 75 salesmen, reaching all small towns, and they include in their operations a complete coverage of general stores merchandise, particularly many outlets

not reached by drug wholesalers.

Within the past few years, a number of the small dry goods wholesalers have begun to specialize in the sale of this lower-price merchandise to drug stores also. Many drug wholesalers don't care to stock anything but a few 10¢ nationally known numbers. There are many drug stores that cannot buy enough of a single line of 10¢ cosmetics to warrant a direct shipment, but the aggregate sales of these stores runs into substantial volume. One firm that sells a number of foot specialties to the 10¢ field has three salesmen traveling 48 weeks during the year calling on dry goods wholesaler and independent 5¢-and-10¢ retail outlets. Out of their total volume of \$900,000 worth of business in 1943, practically all from 10¢ stores, they did \$600,000 worth with the Big 11 (the national chains-Woolworth, etc.), and \$300,000 with the local chains, independent outlets, and the type of wholesaler mentioned above. Their sales cost was less than 8 per cent to the independents. A potential volume of this size cannot very well be disregarded.

Another firm started to sell in the 10¢ field in 1937. At first the sales to outlets other than the Big 11 were 7 per cent of the total. While sales increased steadily in 1941, the sales to the independent outlets grew from 7 per cent

to 40 per cent of this firm's total.

The dry goods wholesaler is interested particularly in supplying his trade with the type of merchandise that will appeal to his public and, at the same time, demands more than the usual drug wholesale discount. His shipments are in small units and transportation costs are high. Furthermore many wholesalers who did not pay too much attention to toilet goods have increased their efforts in this field, since they had their sale of notions, hardware, and soft lines cut down because of shortages. One very large hardware wholesaler, with 174 salesmen, has recently started to expand its toilet goods sales and is making rapid strides in that direction. This particular firm found that a completely integrated 10¢ department, handling merchandise other than hardware, helps cut down the sales cost for all lines.

PROFESSIONAL ENDORSEMENT AND TYPE OF OUTLET: Products that are being offered to the public with some form of professional endorsement should be restricted to the type of stores that still try to retain the professional atmosphere of the pharmacist, since in such cases the endorsement is likely to be more effective.

It will usually be found that the independent retailer of the neighborhood type of store can handle the product better and is more willing to cooperate with the maker of a professionally endorsed product than are the chain stores. The druggist must be a pharmacist, and usually his clerk is one also, which accounts for the professional attitude, while most of the clerks in chain stores are not. The latter are sales people with little if any professional background. Therefore, the public is not inclined to consult or listen to the suggestions of these clerks when the purchase of the professional type of product is being considered.

D.C. 1938, p. 32.

This figure may need drastic revision upward. This is suggested by The New York Trust Company survey of hospitals which reports as of 1945 a total of 6611 registered hospitals in the United States with a bed sapacity of 1,729,945. The next few years will see the capacity exceed 2,000,000 fiels with annual admission of over 18,000,000. See The Index, Summer

¹⁰ Statistical Supplement to Principles of Marketing, by H. H. Maynard, W. C. Weldler, and J. N. Beckman, Ronald Press Co., p. 23.

12 The American Perfumer and Essential Oil Review, Mar. 1942.

12 See Woolworth story in Drug Trade News, Aug. 5, 1935.

13 Quoted in a letter to the author by Progressive Grocer.

14 Jan. 1945 issue.

12 Business Week, April 28, 1945.

13 The Federal Trade Commission investigation in the Elizabeth Arden case revealed 37 demonstrators in Abraham & Straus in Brooklyn. See Federal Trade Commission vs. Elizabeth Arden, Order 3133, Oct. 7, 1944.

17 A limited survey conducted by Louis Bader, but not published, shows mea's toiletry articles purchased largely in drug stores.

18 Ectail Trade, Part 3, p. 7,

18 Consumer Incomes in U. S., National Resources Committee, Washington, D.C. 1938, p. 32.

⁰⁰⁰ Inda with annual admission of over 18,000,000. See The Index, Summer 1945.

2 Journal of Retailing, Jan. 1934.

2 See Report of Federal Trade Commission in Elizabeth Arden Case involving Robinson-Patman Act and the use of demonstrators.

2 Business Week. Mar. 10, 1945, p. 93.

2 Note the campaign of Coty, Inc. in 1944 to reduce the number of crug stores to handle their line. They selected only those that would stock a minimum of \$177.14 of their products and scree to give the amount of display space specified by Coty. Coty is reported to have dropped 2700 accounts in New York City alone. (Business Week, April 27, 1946). This plan was first tested out in a limited area, and it is believed to be the new policy ts be adopted nationally.

Trade Practices

This chapter tells about certain trade practices peculiar to the drug field. In most cases, they have become trade customs adopted and used by the majority of the firms in the industry. These practices have to do with distribution, transportation, discounts, credit investigation, guarantees, shipping charges, taxes, price maintenance, return of goods, and flexibility of sales policies. The practices to be followed are largely to be determined by the individual's ability and merchandising policy. The problem is to determine how and when to draw the line, when to follow trade practices, when to change to a plan in keeping with individual circumstances. With the general information of the common methods used at hand, it is then only a question of choice as to which plans to adopt. In any case, if a new practice is to be followed careful research should precede it and it should be put into effect slowly since good will can be built only if what you propose to do seems to be good and is generally accepted by those affected by it.

WE have discussed in Chapter 6 the usual methods of selling a product through either the wholesaler or direct to the retailer and the problems these methods entail. Each of these methods has many supporters in the drug field. Choosing the method best suited for his needs entables the manufacturer to operate with the greatest efficiency, making it possible for him to quote low prices and thus earn large profits. There are other practices that need consideration and some of them are now presented.

DISTRIBUTION OF GOODS

AVAILABILITY OF GOODS: The first consideration every manufacturer must have in mind is how to make his products most readily available to the dealers in the markets previously decided on as the best in which to sell.

The chief advantage of working through the wholesaler usually is that the manufacturer's products are thus made most easily available to the retailer. It is quite evident, though, that the wholesaler may not push a line as the manufacturer desires. He may also, because of financial conditions, keep his stock of a manufacturers' product at an unusually low point. Sometimes the wholesaler feels that his best interests are served when he controls his investments in certain types of products so that the one or two lines that he may think yield exceptional returns are favored.

From a sales standpoint, experience has shown that it is best in most situations for the manufacturer to be able to ship directly to the retailer. This is especially true when the former wishes to keep the retailer well supplied with a complete stock of his products at all times. Practically, however, this is not always advisable especially if shipments are made from the factory only. Consequently, many manufacturers find it more desirable to use the wholesaler. When this is the case, the manufacturer's products must be made easily accessible to his wholesalers if he expects them to handle his goods properly.

Within the last few years, many manufacturers have taken upon themselves the functions of the wholesaler.

Manufacturers today drop-ship orders to retailers that years ago would have been altogether ignored. For this reason, the manufacturer finds it necessary to make his goods readily available to each trading area. This has compelled him to carry a stock of goods at strategic points throughout the country. Sometimes the method employed is that of establishing branch houses with complete stocks, or arranging with brokers to carry consigned stocks, or again taking advantage of the service of public warehouses; in only a few cases are shipments of everything ordered by the dealer made from the factory only.

In the battle for the business of the consumer, there are thousands of manufacturers fighting for the same dealer and public attention. No retailer is going to worry particularly about pushing any manufacturer's line, or even stocking the product, if he finds that he cannot have his orders filled promptly. The safety of any business, therefore, depends on the assurance of ample stocks within easy reach of customers at all times. Since 1929, many wholesalers have kept their stocks down to a minimum, and frequently run out of merchandise while goods are en route. Where this danger is acute and recurs frequently, manufacturers find that it is essential for them to maintain a warehouse stock at strategic points in their trading areas.

WAREHOUSES AS SHIPPING AGENTS: In the drug field, as in some other fields, a number of organizations have developed that have taken over the warehousing problems of the manufacturer. They offer one of the most economical methods of gaining wide accessibility for the manufacturer. These firms are to be found in cities like Chicago, Kansas City, Dallas, San Francisco, Los Angeles, and act as the wholesaler's branch warehouses: O'Callaghan in Los Angeles, California, and the J. T. Erlan Co. of San Francisco, California, are typical. Complete information of these firms can be found in the advertising columns of trade papers like *Drug Trade News* or it can be secured direct from the publisher.

These firms receive large or carload shipments of goods, split them up and ship to dealers in smaller lots for the manufacturer, make out his invoices, report regularly as to the condition of the stock, thus enabling the manufacturer to give prompt delivery service to the customers even at great distances from the factory. This service assures both the wholesaler and the retailer that goods can be delivered in quick time. Under this system, the manufacturer continues to check the credit, and gives instruction to the warehouseman as to what and how much to deliver to the manufacturer's customers, wholesalers or retailers.

Many of these warehouse firms are exceptionally efficient, and their charges are low, usually between 2 and 3 per cent of the net billing, a charge which takes care of all of the overhead operations. (Billing is done more rapidly and results in quicker payment for the goods that are sold than under other systems.) The cost is probably lower than it would be for most manufacturers of drug and cosmetic products if they maintained their own private warehouses. Besides giving prompt service, such shipping brokers therefore, save the manufacturer money in shipping costs. For example, one manufacturer found his individual shipments from New York to points west of the Rockies costing approximately 11 per cent in transportation expense alone. By shipping in carload lots to San Francisco, warehousing, and reshipping in small lots to points as far east as Salt Lake City, he was able to reduce shipping costs to 7 per cent.

Not only did the manufacturer enjoy a net saving of 4 per cent but in addition he eliminated the possibility of lost sales because of a lack of stock conveniently available to customers distant from the home office. Another result was a more rapid turnover of stock, checks in payment were received for shipments almost as rapidly as notice of shipments, all of which made for a material increase of the net profit on the Pacific Coast business.

Many manufacturers may want to handle their own orders through their own direct representatives thus assuring greater secrecy to their business. This procedure necessitates, however, the expense of employing a stock-keeper, a warehouseman, and perhaps a clerk wherever goods are stored in addition to rent, insurance, and other expenses. Therefore, this method of operating may not ordinarily be as economical as that of using the services of the public warehousing companies, whose costs, because of large-scale operation, may be quite low.

These warehousemen or, rather, distributing agents, also make available for the manufacturer a central headquarters to which salesmen's mail may be addressed, and from which plans of operation may be controlled, and, in fact, act as a branch office with only a fraction of the usual branch office expense.

In several cases a number of noncompeting firms have cooperated in the creation of warehouse stocks under the direct supervision of a representative selected by them. This practice has the advantages of using a public warehouse, and thus cutting expenses, while at the same time a measure of secrecy about the operations is maintained. However, the method does have an important disadvantage and that is the problem of securing agreement on a diversity of problems—which does not always work out as desired. Usually, too, these firms need to be in similar but unrelated lines and it is not always possible to bring

enough of such firms together with large enough turnover for economical handling of their products.

Where the independent warehouse, however, takes care of this work and assumes the responsibility of doing it properly, each manufacturer is assured of receiving the type of service that he wants provided he is willing to pay the service charges.

COMBINING DISTRIBUTION CHANNELS: How to secure adequate distribution as represented by availability of merchandise to customer can be answered in a multiplicity of ways, and each manufacturer must study to discover the particular methods he wishes to utilize to gain his distribution.

One manufacturer may utilize the simplest and most direct way of getting to the retailer and thus to the consumer; others may find it advantageous to use not one but practically all of the methods available.

In determining the method to be adopted, the questions of expense, discounts, prices, and dealer's cooperation are important. That no one method can be considered as universal is indicated by the results of a survey of the distribution methods used by leaders of this field. Thirty-five concerns were questioned and the following channels were used either singly or in combinations as set up:

- 1. Manufacturer to department store, to consumer.
 - " chain retailer, to consumer,
 - " retailer, to consumer.
 - " chain wholesaler, to dealer, to consumer.
 - " wholesaler, to dealer, to consumer.
- 2. Manufacturer to manufacturer's representative, to wholesaler, to dealer, to consumer.
- 3. Manufacturer to consumer (direct by mail).
 - " department store, to consumer.
 - " chain retailer, to consumer.
 - " retailer, to consumer.
 - " branch, to wholesaler, to dealer, to consumer.
 - " branch, to dealer, to consumer.
 - " branch, to consumer:
 - " chain wholesaler, to dealer to con-
 - " wholesaler, to dealer, to consumer.
- 4. Manufacturer to department store, to consumer.
 - " chain retailer, to consumer.
 - " wholesaler, to dealer, to consumer.
 - " wholesaler, to service station, to con-
 - " broker, to wholesaler, to dealer to consumer.
- 5. Manufacturer to licensee, to dealer, to consumer.
 - " wholesaler, to dealer, to consumer.
- 6. Manufacturer to department store, to consumer.
 - " chain retailer, to consumer.
 - " retailer, to consumer.
 - " branch, to wholesaler, to dealer, to
 - " branch, to dealer, to consumer.
 - " wholesaler, to dealer, to consumer.
 - " industrial, to consumer.
- 7. Manufacturer to wholesaler, to dealer, to consumer.
- 3. Manufacturer to department store, to consumer.

Manufacturer to chain retailer, to consumer.

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- " retailer, to consumer.
- " branch, to wholesaler, to dealer, to consumer.
- " branch, to dealer, to consumer.
- " wholesaler, to industrial consumer.
 - " dealer, to industrial consumer.

Where a combination of channels is used care must be taken to differentiate between them either geographically or by product. One can hardly sell to both retailers and wholesalers in the same trading area and expect enthusiastic reception of the line of demarcation between accounts or a split-up of territory.

SHIPPING CHARGES: The custom with regard to shipping costs as they affect drug manufacturers may be stated as follows: Freight and other transportation charges are usually prepaid by manufacturer to destination. In most cases these are prepaid, regardless of the size of the order. Those manufacturers who do not prepay all shipping charges make it a practice to prepay shipments of a certain minimum order. Frequently, the manufacturer who sells direct to the retailer will make some sort of restriction as to the size of order on which freight is prepaid. The manufacturer, however, who sells to the wholesaler prepays in nearly all cases so that the wholesale prices will be the same in all places. The National Wholesalers' Drug Association has gone on record as favoring this practice.

The retail druggist expects, if the freight is prepaid, that the goods will be delivered to his door. He has no facilities to call at the freight offices for goods and because of this fact looks with disfavor on any merchandise that is not delivered to his store. For this reason, it is usually necessary for the manufacturer who sells direct to ship either by express or parcel post. In the larger cities, where freight services are used, he can get store delivery, but on less than carload shipments this is expensive. Special service companies, and more recently, some of the railroad companies, give store delivery at a small extra cost. The manufacturer should use a service of this type when shipping to retailers in the cities where it is available.

Generally, the manufacturer selects the cheapest transportation medium when shipping goods unless the retailer or wholesaler is paying the transportation, in which cases he follows their directions. It very frequently happens, however, that the chain retailers who have built up extensive traffic departments can guide the manufacturer in his selection of transportation routes so that his shipping costs are held to a minimum. The traffic departments of the large chains constantly study freight classifications and best routes; they regularly prepare informative bulletins which give the most economical routes for shipments. The manufacturer who is able to get these bulletins regularly will find them a comprehensive guide for use in all shipments to the same points reported on in the bulletin.

SOME FINANCIAL PRACTICES

TAXES: Another cost that the manufacturer sometimes finds necessary to absorb is the excise tax. Under the 1932 and 1938 law the tax was 10 per cent on the manufacturer's sales price. Some manufacturers at first charged the retailer the full tax. Others raised the retail price of their products. This caused some products to sell at odd prices like 55¢ and \$1.10. However, after a year or two

practically all manufacturers absorbed the tax. When the 1938 law clarified the tax and defined who was the manufacturer, many reduced their tax costs by buying the finished cosmetic in bulk from trade houses packaging it themselves, or if they manufactured themselves, took advantage of the provisions in the 1938 law which permitted the deduction of freight, cash discount, selling, and advertising expense before figuring taxes. This cut the tax considerably and thus these manufacturers absorbed the tax as merchandise cost. In the 1942 tax bill, the then existing tax was canceled and a new retail tax of 10 per cent was made, which in 1944 was increased to 20 per cent, so that now, the manufacturers are out of the picture until Congress changes its mind.

DISCOUNTS: Most drug manufacturers permit a cash discount of 2 per cent per payment within 10 days from date of invoice. Many wholesalers have attempted to stretch the ten-day discount basis by asking for the discount on a ten-day, end-of-month payment. They are perhaps justified in their attitude because 80 per cent of the retailers feel that this cash discount is deductible after they receive a statement on the first of the month; whether they buy from the wholesaler or direct from the manufacturer, they pay that way. This procedure has developed because retailers usually have no bookkeeping system of any kind, and wait for the wholesaler's statement before paying.

Those manufacturers who sell to wholesalers will find that there are comparatively few wholesalers who do not take the cash discount. The cash discount is so important a matter and is so vital to the profits of the wholesaler that it is essential for him to take his cash discount if he is really going to make a profit. Most wholesalers can make a net profit equal only to twice their cash discount, so that if they cannot take the cash discount, they lose 50 per cent of their net. A cash discount of 2 per cent for payment in 10 days is the equivalent of 36 per cent interest per annum on the investment, and the wholesaler needs that advantage.

Department stores demand discounts on an end-of-month basis. Some firms, if the terms are changed to this basis, calmly anticipate their payments so that the manufacturer pays the cash discount and in addition an interest charge for getting the money sooner. It is a strong firm, indeed, that can withstand the demands for the stretching of discounts. Some manufacturers have adopted a plan of payments as follows:

For invoices dated from the 1st to the 15th payble on the 20th of the month.

For invoices from the 16th to the 31st, payable on the 5th of the following month. This enables the wholesaler to collect his bills and cuts down on the individual number of checks.

Payment on time would seem to be purely a matter of habit. If manufacturers insist, their customers will make payments in accordance with agreed terms. The return of a few checks to discount "chiselers" has a salutary effect in training clerks in customers' offices to be punctilious in making remittances where premiums in forms of large cash discounts are given. Carelessness in not keeping after customers for prompt payment is likely to result in the slowing up of remittances and in increased expense for interest.

DROP SHIPMENTS AND DISCOUNTS: Manufacturers who sell direct to retailers receive orders from their representatives and make shipments as orders are received. Manufacturers also receive and accept orders from retailers that are turned over to the wholesaler to be filled from the wholesaler's stock. When a new line is introduced, and the wholesaler is disinclined to stock it before a demand for it is developed, manufacturers find that they are compelled to sell direct and to make what is termed "drop" shipments. A drop shipment is a shipment made for the wholesaler by the manufacturer direct to the retailer, the wholesaler accepting the responsibility. In cases of this kind, drop shipments are made only after the wholesaler has seen the order and checked it for credit. Usually drop shipments are made in the case of deals because deals are employed in effecting the introduction of new products that wholesalers may not want to add to their lines prior to the creation of a steady demand.

Regardless of the fact that the manufacturer's representative may have done all the work incident to selling the merchandise, the wholesaler expects the full discount on any shipment that is made to his customer. The wholesaler in these cases only assumes the credit risk and performs the necessary bookkeeping and collection service. Some manufacturers, because of the popularity of their products mong consumers created by their advertising, are able to sell to wholesalers naming two discounts, one for shipments from stock and the other for drop shipments. For example, one firm whose standard discount is 16 2/3 per cent gives a discount of only 15 per cent on drop shipments where wholesalers do not carry full stock. The National Wholesalers' Drug Association has been against the practice, but lately they have been more inclined to condone it since the custom of wholesalers giving up part of their discount had practically disappeared except with Mutuals.

DEALS: Deals—the baker's dozen principle—are more prevalent in the drug field than in any other industry catering to the retailer. Whether or not the long-run effect is good is still a matter of dispute. Because of competition, deals were becoming too costly and the tendency of late has been to discontinue such deals as much and as quickly as possible. Whether this trend is temporary or whether it will result in the permanent establishment of net prices in this industry remains to be seen. The current O.P.A. regulations make deals a temporary (90-day) affair only. This fact has cut down deals for the time being.

PRICE MAINTENANCE: The drug field, more than any other line of branded merchandise, has been faced with the problem of price cutting. Most firms, dealers and manufacturers, now favor price maintenance. Whether a manufacturer considers it worth while to make a legitimate attempt to maintain price or not is a question that can be determined only after years of experience that reveals its possible profitableness. It is true, however, that the following may be safely accepted as a basic fact: the question of price maintenance does not begin to become annoying until a product has become popular. For this reason, in the first few years the manufacturer's real worries about price maintenance are of comparatively little moment, as price cutting of the product and its use as a "loss leader" mean little. Price maintenance is now the least of the druggist's problems since recent legislation permits it, and it is now being accepted by most manufacturers in the drug field (See Chapter 16).

CREDIT INVESTIGATION: Most National Wholesalers' Drug Association members have been established for so long that credit information about them is very easily obtainable. Many firms who sell to retail druggists adopt the practice of checking almost every retailer who has been in business for any period of time without resorting to any intricate credit investigation; or it is done on the basis of salesmen's reports. The manufacturers' attitude on this subject is based on the theory that any druggist who has been in business for several years is entitled to at least one shipment. If he does not pay promptly enough to warrant subsequent shipments, then his credit will be restricted. But drug stores are long established in most localities, and for that reason there is not the necessity that occurs in other fields for wide credit investigation.

THE DEALER AND HIS CREDIT STANDING: The question of extending credit to retailers has always been important. Manufacturers, because of the tight credit conditions such as prevail in a depression, found it almost impossible to get a good distribution of their product through wholesalers for the reason that the wholesalers were trying, as much as possible, to curtail the purchases of their dealer customers so as to force them to keep their obligations within reasonable limits. Wholesalers not only curtail their customers' purchases of well-known products but they also restrict severely the purchase of new items.

The wholesaler who is giving some of his dealers only limited credit and whose profit depends largely upon the products he is pushing is more inclined to allow this credit only on orders for his own favorites, and curtails almost completely the shipment of new products that will increase his dealer's indebtedness, and that may not move off the shelves quickly. Such new items make it hard for the dealer to pay his bills promptly; consequently, the wholesaler should not be too severely censured for his attitude.

The distribution censuses show that a large percentage of the purchases of the drug retailers is made through wholesalers. The remainder is sold direct by manufacturers who have large lines of merchandise and who find that wholesalers are not in a position to serve those lines completely. Large firms like Parke, Davis Co., Sharpe & Dohme, Colgate, E. R. Squibb and Co., Lambert Pharmacal Co. have extensive lines that in large part they sell direct to the retailers. The lack of extension of credit is sufficiently important to warrant the statement that even more manufacturers or manufacturers of new products may be forced to sell direct who otherwise would retain the wholesaler in his present position as a distributor. In this connection it should be pointed out that manufacturers can no more afford to extend credit to poor risks than can wholesalers so that a manufacturer should not succumb to the temptation too easily. Before credit is extended to retailers thorough examination of the risk should be made. The wholesaler is, as a rule, much closer to the retailer than any manufacturer and consequently knows the situation in its true colors. If the wholesaler is not willing to risk extending credit the manufacturer may be foolish to do so the reason therefore should be great. However, recent improvement in the financial position of most druggists has made it easier to ship direct. without high credit risks.

One credit manager, over a period of 25 years, has adopted the policy of checking out to any retailer a \$25 shipment and during that time has kept credit losses down to less than ½ of 1 per cent. However, it is not recommended that initial orders be too small, because, strange as it may seem, smaller bills seem to be harder to collect than large ones.

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As a result of the increase in business per drug store since 1939, the probabilities are both that larger orders can be placed by stores and that a better line of credit can be granted. The wartime study referred to above estimates average chain drug store sales at \$159,546 as against \$97,402 in 1939 and independent drug store averages at \$38,853 as against \$21,611 in 1939. If anything closely approaching this can be maintained during the post-war period many more manufacturers will be encouraged to sell direct than before. It will be desirable then to know more about the reasons for failures than ever before.

The need of exercising care in granting credit is borne out each time a failure occurs. In all too many cases credit has been granted on an insufficient base. Manufacturers and wholesalers, particularly in the drug field, seem to be lax in their credit methods. The frequently high caliber of the men in this field, plus a belief that if a man has been in business a number of years he is probably safe as a credit risk, has led to disaster, especially since 1928. Manufacturers and wholesalers find it necessary, in each case, to go by, in addition to hunch, a certified balance sheet and a detailed profit and loss statement, as well as

a study of physical factors about the business such as location, character and ability of owner, adequate capital and records, store personnel, and appearance of store.

Several careful studies have been made of causes of failure of businessmen. The one conducted by the Department of Commerce among St. Louis druggists revealed the following as the causes: half of those failing attributed it to lack of capital; 25 of the 30 had had previous experience in drug store business but only two as owners: 20 stated their rents were too high; 16 thought their stores were poorly located; 46 creditors stated that in their opinion 22 of the failures were incompetent; 5 of the failures were thought to be dishonest; others had bad debt losses many times higher than the average; records kept were inadequate. In addition to these there were other causes such as the depression, neighborhood changes, competition, and illness.

In the study of 612 failures in New Jersey, also reported by the Department of Commerce, poor business methods and practices were given first place as a cause of failure, then followed the depression, decline in real estate values, and, as minor causes, speculation outside of business, gambling, dishonesty, illness, and personal extravagance.

In still another study of 570 commercial bankruptcies, reported on by the Department of Commerce, the same melancholy tale is told—inefficient management, unwise use and extension of credit, adverse domestic and personal factors, and dishonesty and fraud.

The fact that credit is so easy to secure, despite huge

TABLE 8
SALES AND OVERHEAD EXPENSES OF 30 FAILED DRUG STORES IN ST. LOUIS, 1925-1931

		Overhead							
	Rent		Rent	All Salaries		All Other Overhead			
Store No.	Net Sales	Total	Per cent of Net Sales	Total	Per cent of Net Sales	Total	Per cent of Net Sales	Total	Per cent of Net Sales
1	\$ 5,400	\$ 4,044	74.9	\$ 1,320	24.4	\$2,196	40.7	\$ 528	9.8
2	17,000	6.216	36.6	1,200	7.1	4,224	24.8	792	4.7
3	12,600	4.080	32.4	1,500	11.9	1,920	15.2	660	5.2
4	68,000	14,568	21.4	6.800	10.0	6,000	8.8	1,368	2.0
5	8,400	1.752	20.9	1.020	12.1	*		732	8.7
6	25,200	7,404	29.4	1,284	5.1	4,200	16.7	1,920	7.6
7	6.720	3,276	48.8	840	12.5	2,160	32.1	276	4.1
8		8,364	59.7	1,200	8.6	4,800	34.3	2,364	16.9
9	8.400	2,388	28.4	720	8.6	1,152	13.7	516	6.1
10	10,800	3,288	30.4	900	8.3	1,920	17.8	468	4.3
11		3,732	34.6	900	8.3	2,400	22.3	432	4.0
12		3.840	45.7	1.260	15.0	1,200	14.3	1,380	16.4
13		21,600	43.2	2,700	5.4	11,880	23.8	7,020	14.0
14	2.010	4,260	84.5	1,800	35.7	2,136	42.4	324	6.4
15		3,900	24.4	1,080	6.8	2,280	14.2	540	3.7
16		2,722	39.6	600	8.6	1,800	25.7	372	5.3
17		+	+	+	+	+	+	+	+
18	0.140	2,832	32.8	696	8.1	1,620	18.8	516	6.0
19	AT 100	12,360	44.8	3,600	13.0	7,464	27.0	1,296	4.7
20		9,660	71.9	1,800	13.4	7.080	52.7	780	5.8
21	21.000	14,400	40.0	3,600	10.0	9,480	26.3	1,320	3.7
22	21.000	10,788	30.0	3,300	9.2	3,520	15.3	1,968	5.5
23		4,464	65.6	1,620	23.8	2,316	34.1	528	7.8
24		4,260	41.8	1,200	11.8	2,400	23.5	660	6.5
25		3.804	38.0	1,500	15.0	1,728	17.3	576	5.7
26		12,960	98.2	4.800	36.4	7.104	53.8	1.056	8.0
27		12,852	42.5	3,000	9.9	8,460	28.0	1,392	4.6
28		6.336	63.4	1,080	10.8	3,600	36.0	1,656	16.7
29	0.400	3,468	41.3	720	8.6	2,280	27.1	468	5.6
30	40.000	10,704	22.3	4,200	8.8	4,680	9.8	1,624	3.4
Total	\$532,280	\$204,372	_	\$56,240	-	\$114,000		\$33,532	
Average .		7,047	38.4	1,939	10.6	‡4,071	21.4	1,156	6.3

^{*}Owner had no employees and stated he did not pay himself salary.

Data not obtainable.

^{*}Average for 29 stores. Sales for Store No. 5, \$8,400, were deducted from total sales, \$532,280, to determine average.

TABLE 9

SALES AND OVERHEAD EXPENSES OF 40 ACTIVE DRUG STORES IN ST. LOUIS DURING 1930*

		Overhead								
				F	Rent All Salaries		All Other Overhed			
Store No.	Net Sales	Total	Per cent of Net Sales	Total	Per cent of Net Sales	Total	Per cent of Net Sales	Total	Per cent of Net Sales	
Lancing	\$97,095	\$27,791	28.6	\$3,600	3.7	\$17,834	18.4	\$6,357	6.5	
2	96,117	28,093	29.2	2,400	2.5	20,030	20.8	5,663	5.9	
3		20,559	26.4	1,725	2.2	13,211	16.9	5,623	7.2	
4		22,744	29.4	3,000	3.9	14,500	18.8	5,244	6.8	
5	59,562	17,719	29.7	3.775	6.3	11,432	19.2	2,512	4.2	
6	50,217	16,306	32.5	1.605	3.2	10,441	20.8	4.260	8.5	
7		11,263	26.1	2,400	5.6	6,902	16.0	1,961	4.5	
8	39,489	12,700	32.2	2,700	6.8	8.092	20.5	1,908	4.8	
9	38,774	11,445	29.5	2,100	5.4	7.234	18.6	2,111	5.4	
0	38,454	9,083	23.6	1,620	4.2	4.955	12.9	2,508	6.5	
I		10,249	27.3	2,400	6.4	5,081	13.5	2,768	7.4	
		9.002		900	2.5	5,498	15.0	2,604	7.1	
	4	9,129	24.6		2.7	6,350	18.3	1.834	5.3	
			26.3	945	5.8	5,120	14.8	1,517	4.4	
		8,637	24.9	2,000			15.3	2,013	5.8	
		8,989	26.0	1,704	4.9	5,272 5,527	16.2	1,521	4.5	
		10,210	30.0	3,162	9.3					
7		9,613	29.2	1,800	5.5	5,587	17.0	2,226	6.8	
		10,063	31.4	1,020	3.2	7,149	22.3	1,894	5.9	
7		7,964	25.7	1,440	4.6	5,024	16.2	1,500	4.8	
0		7,379	23.9	1,800	5.8	4,355	14.1	1,224	4.0	
		6,816	22.3	1,080	3.5	4,024	13.1	1,712	5.6	
2		8,730	29.5	1,500	5.1	6,078	20.5	1,152	3.9	
3		8,510	32.6	1,500	5.7	4,895	18.8	2,115	8.1	
		7,643	29.4	1,159	4.5	5,276	20.3	1,208	4.6	
5	25,828	10,550	40.8	1,763	6.8	7,171	27.8	1,616	6.2	
5	24,831	8,093	32.6	1,380	5.6	5,424	21.8	1,289	5.2	
7	24,577	7,773	31.6	1,500	6.1	5,051	20.6	1,222	5.0	
8	23,884	7,789	32.6	1,080	4.5	5,141	21.5	1,568	6.6	
9	23,755	6,742	28.4	1,290	5.4	3,777	15.9	1,675	7.5	
	23,355	8,051	34.5	954	4.1	5,858	25.1	1,239	5.3	
	22,432	7,389	32.9	1.500	6.7	4,613	20.6	1,276	5.7	
	21,664	7,565	34.9	1,200	5.5	4.911	22.7	1,454	6.7	
3	20.885	6.904	33.1	900	4.3	5.219	25.0	785	3.8	
4	20,820	6,154	29.6	1.260	6.1	4,020	19.3	874	4.2	
5		7,361	36.8	1,200	6.0	4,756	23.8	1,405	7.0	
		4,682	26.0	780	4.3	2,970	16.5	932	5.5	
		5,198	29.2	540	3.0	3,674	20.6	984	5.5	
	25000	4,660	26.4	900	5.1	2,800	15.9	960	5.4	
		4,302	25.3	720	4.2	2.384	14.0	1,198	7.0	
)		3,641	40.7	875	9.8	1,663	18.6	1,103	12.3	
	\$1,400,610	407,491		65,177		\$259,299		\$83,015		
Average.	35,015	10,187	29.1	1,629	4.7	6,482	18.5	2,075	5.9	

^{*}Data secured from Cinchona Club, St. Louis, Mo.

annual losses from business failures, suggests that creditors in their desire to secure larger volume of business encourage debtors to accept credit when the reverse should be the procedure. It may be that small retail druggists present a special problem and that much in the way of reports of condition and accounting methods cannot be expected.

Insistence on adequate record keeping and the making of periodical reports would probably work out to the benefit of the small dealer as well. If the dealer is too small or incompetent and cannot keep records and make reports if an account becomes chronically slow pay, credit should be refused. If reports can be secured then the question of norms arises. On what basis shall we judge while dealing with our customers? Experience will probably yield the best results. What do unsuccessful and successful firm's records reveal?

The thorough study of the failures among drug stores made in the St. Louis survey yields some excellent materials in these respects, as shown by tables 8 and 9.1

In the cases of most of the failures it will be noticed that overhead is a large percentage of sales and, of the total, rent and other overhead together constitute a large share of the overhead. Such percentages are, as they have always been, symptomatic, for the most part, of poor business methods, incompetency, and poor location. In a quite different study of drug store closings made by Dun and Bradstreet, Inc., for the year 1943, high rent and too large withdrawals by the owners characterized the closings with loss to creditors. Where the variation from the percentages shown by the active drug stores is substantial then caution is desirable and the need of investigation would seem to be apparent. Since no study comparable to that of the 1926 St. Louis survey has been made it would seem that another should be made showing sales and overhead expenses of both successful and unsuccessful stores.

¹ Causes of Failures Among Drug Stores, Dept. of Commerce. Washington, D.C., pp. 12-14.

